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RAILWAY GAZETTE**

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INCORPORATING

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An index to the eighty-fourth volume of THE RAILWAY GAZETTE covering the issues from January 4 to June 28, 1946, has been prepared, and is now available free of charge on application to the publisher

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**HISTORY
OF THE
BRITISH RAILWAYS
DURING THE WAR
1939-45**

by R. BELL, C.B.E.

with a foreword by Sir William Wood,
President, London Midland & Scottish Railway

THE RAILWAY GAZETTE
33, TOTHILL STREET, WESTMINSTER, S.W.1

Nationalisation of Export Trade

THE disturbing effects of nationalisation on any industry are sufficiently serious, but State ownership in the case of industries with a large export trade may have grave consequences. Lord McGowan, Chairman of Imperial Chemical Industries Limited, recently questioned the wisdom of some of the policies being pursued by the Government, especially that relating to the national ownership of such industries as iron and steel, where he feared that there might be dangerous consequences. After they became nationalised, industries would continue to be administered by their present staffs, but direction would be transferred, if the Coal Board formed a precedent, to a new, untried, and in some respects inexperienced body. He could foresee complications arising if, for example, an American steel company found itself prejudiced in an overseas country by competition with the British Government there. Naturally it would make representations to Washington, and he doubted if this would make for peace and harmony. He questioned whether, in view of the powers that were being taken by Ministers, major decisions would rest on the merits of the case, and whether the boards set up by the Government would be free to give a judgment based on economic factors only. Decisions might, indeed, become a matter of political judgment, and if it became difficult to obtain decisions, then business in keen competition with other countries would be prejudiced as a result.

Railway Reconstruction in Italy

Something has already been said in our columns of the work undertaken by the Allied Forces in rehabilitating the railways of Italy after the recent war, but the continued shortage of paper has prevented full justice being done to the subject. As noted elsewhere in this issue, this deficiency has now been remedied by the Central Mediterranean Force in a fully-illustrated official report on the work of the British, Dominion, and Indian Military Railway Service units between September, 1943, and January, 1946. The thoroughness of the demolitions by the retreating enemy, and the accuracy and intensity of Allied air attacks, combined with the mountainous country to render the task of the engineers the more formidable. More than 2,400 miles of track had to be renewed completely; 83 tunnels were in need of repair; 490 bridges and viaducts were reconstructed; and some 230 miles of track were provided for deviations, depots, and sidings. The work of repairing several of the larger viaducts called for feats of improvisation that fall far outside the normal training and experience of a railway engineer, and the work of the South African units in clearing and repairing the damaged tunnels is also worthy of note. It is a great tribute to all concerned that at no time was the Allied advance seriously checked by lack of adequate lines of communication.

Increased Locomotive Exports

The Board of Trade returns for the first six months of this year record a very substantial rise in the number and value of British locomotive exports, not only as compared with the similar period of 1945, but also with that of 1938. Shipments of main-line locomotives this year to the end of June totalled 160, of a value of £2,423,875. This compares with 30 in the first half of last year, valued at £526,504, and 90, worth £788,790, in the first six months of 1938. So far this year 57 locomotives, valued at £1,159,932, have been shipped to the Union of South Africa. In the first half of last year the Union received 25 locomotives, worth £493,200, and in the first half of 1938, 16 engines, worth £195,020. British India has taken 33 locomotives this year at a cost of £531,896, which compares with one in the similar period a year ago worth £7,335, and 10 in the first six months of 1938, of which the value was £59,956. Other British countries account for 19 locomotives which are entered in the accounts at £146,124, which compares with one locomotive at £10,000 in the first half of last year, and 22 in the first half of 1938, when the value was £220,198. The Argentine Republic, which figured in the returns for the first half of 1938 with 16 locomotives worth £130,898, has been absent from the records for the two later periods.

Other Rolling Stock and Parts

The export of carriages in the first half of this year was valued at £40,000, compared with £25,410 in the first half of 1945, and with £139,194 in the similar period of 1938. Shipments of wagons have been at a high level this year and are returned as worth £2,253,584, which compares with £156,864 last year and £736,770 for the 1938 period. Parts for locomotives, except tyres, wheels and axles, are valued in the latest returns at £797,302, against £404,561 to June, 1945, and £556,496 to the same date in 1938; for carriages they were £169,608, which compares with £45,644 and £293,620, and for wagons their value has been £2,136,947, against £47,690 and £311,230. The export of wheels and axles has brought in £656,970, against £28,457 in the first half of last year, and £210,394 in the first six months of 1938. Tyres and axles are given as £655,331 for the first half of this year, £137,580 for the similar period of 1945, and £384,928 for that of 1938.

Overseas Railway Traffics

In the first three weeks of the current financial year, Entre Rios receipts lost ps. 17,600 in comparison with 1945-46, but in the week ended July 27 an increase of ps. 33,800 was shown. Midland Uruguay traffics for the 52 weeks to June 30 totalled £223,623, an increase of £6,088, but North-Western of Uruguay receipts for the year were £676 lower at £66,462. An increase for the year of £1,068 was shown by the Uruguay Northern, with an aggregate of £20,651. The Buenos Ayres Great Southern gained ps. 189,000 in the fortnight ending August 3. Buenos Ayres Western results for the week ending July 27 were up by ps. 2,000, but the following seven days brought an improvement of ps. 136,000 in comparison with the previous year. Central Argentine traffics have gained ps. 166,850 in the fortnight under review. Results are compared in the table below:—

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffics	Inc. or dec.
Buenos Ayres & Pacific*	5	2,126	+108	10,838	+1,113
Buenos Ayres Great Southern*	5	3,189	+71	16,752	+1,476
Buenos Ayres Western*	5	1,139	+136	5,716	+296
Central Argentine*	5	3,091	+69	15,364	+571
		£	£	£	£
Canadian Pacific	31	1,368,250	-181,000	42,245,500	-5,230,250

* Traffic returns in thousands of pesos

Canadian Pacific receipts for the seven months to July 31 decreased by £5,049,250, but the total of £2,079,750 for the ten days ended July 31 showed an improvement of £788,000.

Short Supply of Engineering Materials

The heavily increased export of raw and semi-finished materials needed by the engineering industry to carry out arrears of orders has caused a good deal of concern. It is felt that if the Government could advance convincing reasons why certain steel and non-ferrous products should be exported in large quantities at a time when British manufacturers have to refuse orders for lack of those materials, the engineering industry could be relied on to co-operate and adapt itself to unavoidable conditions. So far, those reasons have not been forthcoming, except in the broadest outline which has taken the form of urging the need for exports of all kinds. Lord Davidson, President of the Engineering Industries Association, has pointed out that, while controls continue, only the Government is in possession of all the information on which to decide the allocation of materials between home manufacturers and overseas markets. He also stressed the loss to the Exchequer which arises through exporting semi-finished materials in scarce supply, instead of encouraging their use in finished products, for which there is an equally heavy overseas demand. At present it is difficult for the engineering industry to comply with exhortations for still higher production.

Non-Ferrous Metal Exports

The Chairman of the Non-Ferrous Metals Export Group does not agree with Lord Davidson's view that the output of engineering products is adversely affected by the exports of semi-fabricated non-ferrous metals. He explains that all the members of his group have adopted and observed the following order of priority in deliveries: (a) Essential home services;

(b) further fabrication for export markets; (c) export of semi-fabricated products; and (d) further fabrication for the home trade. This order of priority has been approved by the Government departments concerned. A large part of the increases in the tonnage of plates, sheet, and strip of copper, brass, and copper alloys, consists of copper and yellow metal sheets shipped to India. Before the war the bulk of this trade was in the hands of German manufacturers, and these materials are made on special plant which is not suitable for the production of those qualities of brass and copper required by the British engineering trade.

Flat-Bottom Track: The New 113-lb. Rail Section

This week we record two developments in the experimental use in this country of flat-bottom rails, in which the four British main-line railways are co-operating closely with the object of securing a track which is stiffer, in both the vertical and lateral plane, than is provided by the use of the customary British bull-head rail. So far only the L.N.E.R. has had any experience of switch-and-crossing work in flat-bottom rail, originally with the rails vertical, and subsequently using the normal 1 in 20 cant. The latter is described and illustrated on pages 178 and 179. This work uses the 110-lb. B.S. section. At present the other three main-line companies have under trial lengthy sections of line laid with the new 113-lb. F.B. rail section developed by the four main-line railways and London Transport in consultation with the Rail Makers' Association. The different shape and the additional weight make the 113-lb. F.B. rail more than 60 per cent. stronger than the 95-lb. B.H. type. The design of the new rail has also enabled the strength of the rail joint to be increased very considerably. The first two turnouts made with the new 113-lb. rail are shown in the photograph reproduced on page 199; they were laid in the L.M.S.R. track at Kegworth last Sunday.

Ten Years of Diesel Passenger Progress

The remarkable development of long-distance diesel transport in the United States was stressed in some speeches given at a luncheon in Denver, Colorado, on June 18, to celebrate the tenth anniversary of the inauguration of the "City of Denver" diesel-hauled streamline train between Denver and Chicago. In 1936 these trains were a novelty; today they are numbered among some 200 passenger trains in the U.S.A., covering 110,000 miles daily, which are hauled regularly by diesel-electric locomotives. Every day no fewer than 42 such trains enter or leave Chicago; and there is no city of any size in the United States through which they do not pass. Many individual diesel-electric locomotives have now run from 1,000,000 to 3,000,000 miles. The plant in Chicago where the original locomotives of the "City of Denver" trains were built in 1936 covered 60,000 sq. ft. and employed 300 men; today it covers 1,600,000 sq. ft. and has 9,000 employees, of whom the number is shortly to be increased to between 11,000 and 12,000, in a works of 2,200,000 sq. ft., in full productivity on diesel-electric power. The two "City of Denver" trains, in the ten years have covered 7,398,224 miles, and have carried a total of 1,029,814 passengers.

Rail Corrugation Investigation

At the University of Illinois recent investigations into the cause and cure of corrugated rails have confirmed that the high bright spots are composed of thin hard layers of metal from 0.001 to 0.005 in. thick, with softer metal between them. Moreover, it has been found that by flame-tempering these hard spots to a bluish colour, at 700° to 800° F., they can be removed. They are, in fact, martensite areas, and at the university it seems to be assumed that they are caused by wheel slip. This is undoubtedly one cause, as corrugations are prevalent where starting and stopping occurs, but it can hardly be the reason for over 80 miles of almost continuous "roaring" or corrugated track, such as was the case in India. For curing the complaint the university recommends, in the first instance, grinding with special rail-grinding cars, like those used by London Transport, as this process also smooths out deep wheel burns. Few railways have such grinding facilities,

however, and for them flame-tempering is suggested. Such treatment will have practically no effect on the hardness of the soft areas, but will soften the hard spots, and the rail will soon have a smooth running surface giving greatly improved riding.

Revised French Single-Line Rules

The various railways which were formed into the S.N.C.F. system in 1938 had widely different rules for working the traffic on their single-line sections. On only one line, the Midi, was provision made for a train to pass another at a crossing station without stopping, and on some the rules were rigid and involved. At no time has there been much taken working in France, and what there was, was chiefly the old plain train staff on unimportant lines; electric token apparatus, for some reason, met with practically no favour. In these circumstances, and in the absence of such rules as obtained in America under the dispatching system, security had to rest on the exchange of telegrams between stationmasters when there was any departure from the timetable, and the authority of those officials has been very great. The standardisation and simplification of the rules became an urgent matter when the S.N.C.F. came into being, and at last has been effected. The result has been, according to an article in the *Revue Générale des Chemins de fer* by Monsieur Marchand, to eliminate several sources of delay at stations and increase the flexibility of operation without diminishing its safety.

Why the "Carré" Remained Unchanged

When the French railways were considering what signal aspects to adopt, after the decision to abolish the white light, they had to provide for maintaining the very important distinction—under their operating methods—between a block section semaphore and an absolute stop signal, or "carré" as it is called from its appearance. The green light used beside a red light in a semaphore had to be eliminated, leaving one red light to indicate "stop and proceed," or "semaphoric stop," and two red lights an absolute stop, as before. The disadvantage of this was that it would be necessary to provide against the danger of a light going out in a "carré," converting it into a less imperative signal. On the electrified Sceaux line, now operated by the Paris Metropolitan, this has been met by transposing the indications and using the one red light as the absolute stop aspect. According to Monsieur Lemonnier's recent book on signalling, the large main-line railways considered doing the same, but the committee appointed to draw up the reformed code of aspects decided not to recommend it, as it would have increased the number of lights required in future automatic signalling installations. The "carré" has thus remained as it was standardised in 1885.

Availability of Steam Locomotives

The percentage of time during which a locomotive is available for service is nowadays considered as an important factor in assessing its general usefulness, but there has been a tendency to pay great attention to this figure where large modern engines are concerned and to neglect it in the case of older locomotives. At a recent meeting at St. Paul, Minnesota, of the Northwest Locomotive Association, Mr. J. O. Converse, of the Minneapolis & St. Louis Railroad, dealt with the principal items which cause American locomotives to be put out of service, and placed tyres, driving axleboxes, and flues at the top of the list. Wheels and tyres seem to give trouble when too low a factor of adhesion is adopted, as there is then an increased tendency to slip and a direct encouragement to excessive use of sand, which has a serious grinding action. Incorrect counterbalancing is another insidious trouble-maker, as it has a pronounced effect on tyre wear. Mr. Converse's watchword is that repairs must be anticipated by vigilant inspection coupled with intelligent supply of spare parts to running sheds. Nothing is said about keeping locomotives reasonably clean. Dirt is one of the greatest obstacles to the proper inspection of locomotives at British running sheds, and a vigorous policy aimed at its systematic removal would do much to increase availability.

Mr. Kenelm Kerr

THE recent retirement of Mr. Kenelm Kerr, O.B.E., Assistant General Manager (Staff), London & North Eastern Railway, brought an unusual career to a close. In 1912, Sir Eric Geddes, who was then Deputy General Manager of the North Eastern Railway, was looking round for an assistant to deal with staff matters. Mr. Kerr, who was at that time a civil servant, happened to visit York to make some inquiries, on behalf of the Postmaster-General, into railway staff arrangements. Sir Eric was impressed by Mr. Kerr's grasp of his subject, and promptly appointed him to the vacant post. Mr. Kerr soon adapted himself to the railway atmosphere at York, and when the war of 1914-18 raised difficult labour problems, his advice was of great value to Sir Alexander Kaye Butterworth.

In 1922 Mr. Kerr took charge of the Passenger Department for a short period, but on the formation of the London & North Eastern Railway Company he was appointed Assistant General Manager (Staff). For 23 years he took a prominent part in negotiating with the trade unions important questions in regard to the pay and conditions of service of the salaried and wages staff. After he succeeded Mr. William Clower as Chairman of the Railways Staff Conference, a large part of his work was done at Westminster on behalf of all the railway companies. In particular he collaborated with Sir John Forbes-Watson in dealing with general labour matters which came before the British Employers' Confederation.

Mr. Kerr had the skill of the experienced civil servant in preparing a case for submission to a wages tribunal or to the Industrial Court. He also possessed no mean powers of advocacy. We understand that he intends to spend his retired leisure at Eastbourne. From his home by the sea he will be able to look back on many years of useful work in the railway service, and cannot, we imagine, have any reason for regretting his decision to exchange Government employment for a livelier sphere of operations. A portrait of Mr. Kerr and some biographical details are given on another page.

Power-Bogie Electric Locomotives for Express Service

WE publish elsewhere a description of the new Bo-Bo type electric locomotives for the Lötschberg Railway. These locomotives incorporate a number of interesting features and represent what is probably the most advanced stage of electric locomotive design in Europe. A radical departure has been made from standard Continental practice in introducing the double power-bogie wheel arrangement, with no carrying axles.

Power bogies previously have been regarded as unsuited to high-speed operation, at any rate where high power output is required, and opinion generally has favoured the solid frame type of electric locomotive with spring-mounted driving motors and individual axle drive. However, it has been possible in this case to keep the total weight of the locomotive with the power bogie arrangement down to 80 metric tons for a power output of 4,000 h.p. at the 1-hour rating. At the same time, as a result of careful design, superior running qualities have been achieved. We had the opportunity recently of travelling on the footplate of one of the new Lötschberg Railway locomotives and we were duly impressed by the steadiness of the running.

With the figure of 80 tons for 4,000 h.p., weight reduction really has been carried to the useful limit. Any further reduction would soon result in insufficient adhesion. The ratio of adhesive weight to maximum starting tractive effort is 3.64, and at 75 km.p.h., 1-hour rating, the ratio of adhesive weight to maximum tractive effort is 5.65. Although these locomotives were designed for the standard Swiss a.c. system of 15,000 volts, 16½ cycles, single phase, there is no reason why a similar design should not be used for a 1,500- or 3,000-volt d.c. locomotive. The control equipment of the d.c. locomotive would be heavier, but this would be offset by the fact that the transformer required by the a.c. locomotive would be dispensed with. The weight of a similar design of d.c. locomotive should not, therefore, be greatly different from the figure of 80 tons for the a.c. locomotive.

The Marshalling Yard at Hamm

FOR nearly five years the great German marshalling yard at Hamm, in Westphalia, was much in the news by reason of the frequent attentions of the R.A.F. with the double intention of disorganising rail communications and destroying war materials and rolling stock. Hamm is on the main line from Berlin to Cologne, about 270 miles west of the capital, and is the concentration point at the east end of the Ruhr industrial area. It was the first large German marshalling yard to be fully mechanised, the new methods being put into operation in October, 1925. Some details and illustrations were published in our issue of September 6, 1940.

In 1938, some 2,600 men dealt with the 7,500 wagons passing through daily; of these, up to 4,000 wagons a day could be handled normally through the marshalling yards, and with two humping locomotives in use these could be increased to 5,800. Today the capacity of Hamm for both marshalling and transit is stated to have dropped to approximately 4,000 wagons a day, but the employment figure has increased to 3,100, largely by reason of the repair work now in progress.

A recent issue of *British Zone Review*, the fortnightly official account of the activities of the Control Commission for Germany, gave some interesting figures. Of the last series of heavy raids, 55 in all, the first was on April 22, 1944. It took eight days to put the yards into operation again after this attack, but the Germans subsequently improved considerably on this by employing an army of 10,000 workmen, Wehrmacht, and slave labourers.

By means of sheer manpower, the use of outsize mechanical bulldozers, and the construction of emergency tracks, it was found possible to get wagons running again after 24-48 hr. from the attack. Some 2,500 tons of high explosive and 10,000 incendiary bombs were dropped on the yards. In addition, 100 locomotives, 144 passenger carriages, and 3,473 goods wagons were damaged. After being a battleground for three days, Hamm was taken by the 9th United States Army on April 8, 1945. The death roll in Hamm was proportionately very low, as only about 1,000 persons were killed, whereas some 20,000 H.E. bombs were dropped on the town. Hamm has been of railway importance for nearly 100 years, for the yards came into being on a small scale at a junction on the Köln-Minden Railway in 1848, and continued to expand with the industrial development of the Ruhr.

The Marketing of Coal

IN 1942 the Coal Charges Account was set up to provide a means of financing part of the costs of the day-to-day operations of colliery undertakings, and also to institute a system for the partial pooling of costs among coal owners with a view to spreading the burden of increased costs due to war conditions. The account derives its income from a levy imposed on the coal supply of all colliery undertakings, which levy is included in the price charged to the consumer. In any year when the income from the levy is insufficient to meet the expenditure chargeable, the deficit is met by advances from the Exchequer.

The levy, which was 7d. per ton in 1942, has now risen to no less than 15s. per ton, and in a report published as a White Paper* last week, the House of Commons Committee of Public Accounts expresses concern that, despite successive increases in the levy, the Coal Charge Account debit was reduced by only £1,000,000 during the year ended March 31, 1946, and it now stands at the very high figure of £33,580,000. The Committee urges that every effort should be made to repay the advances and place the production and marketing of coal on a self-supporting basis. The Ministry of Fuel & Power states that of the £34,580,000 which was outstanding at March 31, 1945, no less than £16,310,000 was advanced during 1944-45 because of the delay in raising the price of coal to meet increased wage costs.

Prima facie, this report does not concern the railway companies, except that the price paid by them for locomotive coal is more than double the pre-war price and the quality decidedly inferior. It will be recalled, however, that under the Local

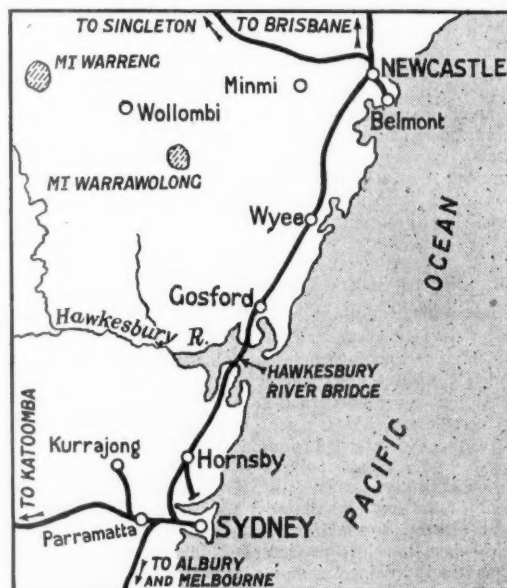
Government Act, 1929, certain industrial premises, agricultural holdings, and railways, docks, etc., were relieved from the payment of a substantial proportion of the local rates payable by them. While the owners of industrial and agricultural premises were allowed to retain this relief, the railway companies were directed to pay an equivalent amount into a Railway Freight Rebates Fund, from which it was used to assist trade and industry by the payment of rebates from the conveyance charges on certain specific traffics.

The Railway Freight Rebates Act, 1936, introduced an amended scheme as from January 1, 1937, which provided for rebates to be payable only on coal class and agricultural traffics. In 1943, however, a further Railway Freight Rebates Act was passed which suspended the payment of rebates from the conveyance charges on coal class traffics, but provided that corresponding sums should be paid by the railways to the Minister of Fuel & Power, and for these to be applied by him, in accordance with arrangements agreed with the Treasury "for any purpose connected with the production and marketing of coal."

When the Bill was being discussed in Parliament it was stated that the intention was that part of the money should be transferred to the Government's Coal Charges Account, substantially to make good to the coal industry the loss incurred because of the suspension of the rebates, and also to reduce the cost of certain subsidies towards abnormal transport charges which were incurred by reason of war conditions. The Act provides that this arrangement should not operate beyond the termination of Government Control of the railways, and the measure of its importance can be appreciated from the fact that something over £1½ millions was paid to the Ministry of Fuel & Power on behalf of the railways during the twelve months ended September 30, 1945, and, presumably, used to subsidise the coal industry.

Bridging the Hawkesbury River

THE first railway bridge over the Hawkesbury River in New South Wales, on the Sydney-Newcastle main line about 25 miles north of Sydney, was designed and built by the



Sydney-Newcastle main line and Hawkesbury River Bridge

Union Bridge Company of New York, U.S.A., at a cost of £327,000; it was opened for traffic in 1889. This bridge has just been closed and replaced by a new structure as described in an article in this issue. To have a reasonably direct line from Sydney to Newcastle, it is necessary for the railway to follow closely along the coast, for the country further inland

* Fourth Report from the Committee of Public Accounts, Session 1945-46. H.M. Stationery Office, price 3d.

is mountainous. Consequently the Hawkesbury River has to be crossed near its mouth. The Sydney-Newcastle line forms part of the through route from Melbourne to Brisbane.

The old bridge consisted of seven spans that were very large for their day, six 416 ft. and one 414 ft. in length, all of the through lattice type. Another outstanding feature for that period was the great depth to which some of the foundations had to be sunk. The northernmost foundation is no less than 162 ft. below high water at spring tides. Increasing weight of traffic after the first world war necessitated the strengthening of the bridge between 1926 and 1931. Other shortcomings also developed in the structure, then 40 years old, cracks appearing in the pier masonry and developing as explained in the article.

It was because of the importance of the Sydney-Newcastle line as a main route between North and South that work on building the new bridge was pushed forward throughout the war, the speed restriction of 15 m.p.h. on the old bridge being a handicap to the expeditious movement of wartime traffic. Although the war ended before the bridge was finished, the fact that construction had not been held up enabled it to be opened early in the post-war period, which was particularly desirable in view of the further speed restriction to 5 m.p.h. imposed over the old bridge in September, 1945.

Named Railway Trains

OF the multitude of things which go to the making of a famous train, somebody once said that the most important item was the name. There is a spice of truth in the jest. The *Flying Scotsman* of the London & North Eastern Railway has become almost a national institution because its title—at once descriptive and appropriate—caught the public fancy in the early days of the East Coast route and has passed into common speech. Whatever else might happen on our railways, people expected the *Flying Scotsman* to leave Kings Cross at 10 a.m. Of course, between the wars, the status of this unique train was maintained by lavishing every care on its super-excellent coaching stock, hauled by the pick of Sir Nigel Gresley's Pacifics, but the final touch of individuality was added by the nameboards.

There were named trains on other railways before amalgamation, like the *Cornish Riviera Express* and the *Southern Belle Pullman* to Brighton, but the custom of giving a designation to popular expresses spread after 1923. The *Royal Scot*, the *Golden Arrow*, the *East Anglian*, and many others became well known to the travelling public. In recent years the American railways have also extended the practice of naming crack passenger-trains—especially if they are streamlined and hauled by diesel-electric power. Once, naming was confined to a few of the principal trains, such as the *Broadway Limited* of the Pennsylvania, the *Empire State Express* of the New York Central, the *Black Diamond* of the Lehigh Valley, and the *Flying Yankee* of the Boston & Maine. Now, the Association of American Railroads has compiled a list of over 700 named passenger trains in the United States, Canada and Mexico.

The first entry is *The Abraham Lincoln*, a streamline diesel train worked by the Alton between Chicago and St. Louis. The

last entry is *Zipper*, a steam train of standard stock operated by the Chicago & Eastern Illinois between the same cities. The intermediate entries vary a great deal in style and effectiveness. Some lack snap, simply indicating the places served, as in the case of the *Pittsburgh-Buffalo Express*. There is a brisker sound about *Cape Codder*, a summer train from New York to Cape Cod (New York, New Haven & Hartford), and *Buffalo Bill* just suits another summer train from Denver to Cody (Yellowstone) over the Colorado & Southern rails. The Wabash shoots *The Chicago Arrow* from Detroit. *The City of Denver* and a string of other "Cities" denote streamline diesels leaving Chicago over the Chicago and North Western metals, save for the *City of Miami* on the Illinois Central.

In winter the Pennsylvania works *The Florida Arrow* by steam locomotive from Chicago via Louisville to the southern resorts. *The Golden Arrow* of the same great system plies between New York and Chicago. *The Goldenrod* is a diesel unit worked by the Southern between Columbus, Birmingham, and Mobile. Pleasant sounding names are *Lone Star* (St. Louis-South Western), *The South Wind* (Pennsylvania and Florida East Coast), *Paul Revere* (Boston & Maine) and *Queen of the Valley* (Reading), but not one of the American railways quite strikes the romantic note of our *Queen of Scots*, the pre-war Pullman run by the London & North Eastern between Kings Cross, Harrogate, Edinburgh, and Glasgow. The Illinois Central, to be sure, will carry you from Chicago to New Orleans in *The Creole*, and the Chicago, Milwaukee, St. Paul & Pacific will take you to the Twin Cities in the *Hiawatha*, and you may ride in *The Mayflower* from New York to Boston, but *Orange Blossom*, which used to go from Boston to Florida, has been discontinued.

Not so the *Ohioan*, the *Oklahoman*, the *Tennessean*, the *Texan*, the *Cotton Belter*, and the rest of the trains bearing matter-of-fact names that denote the regions which they serve. After surveying the list, one wonders whether the American railways might not have made better use of their beautiful place names and of old Indian slogans. Certainly the *Iroquois* of the New York Central goes from New York to Chicago and the *Pocahontas* is run by the Norfolk & Western between Cincinnati and Norfolk, but the *Winnipeg* does not stir any enthusiasm as a label for a Canadian Pacific train to St. Paul and Minneapolis by the Soo Line. The *Tomahawk* probably pleases the schoolboys whom it carries from Chicago to Star Lake. As yet no passenger train has been called *The Atomic Bomb*.

Over 300 freight trains are thought deserving of names. Of these we like best *The Big Smoke* of the Pennsylvania labouring between Columbus and Chicago, the *Hot Shot* running over the Illinois Central from Council Bluffs to Chicago, and *The Highball* of the Great Northern connecting Seattle and Portland. *Uncle Sam* may serve well enough for a Pennsylvania freighter from St. Louis to Enola, but we cannot understand why a goods train from Enola to Buffalo should be nicknamed *The Purple Emperor*. The New York Central has made a hit by introducing a *Pacemaker* freight service to give dusk-to-dawn transits between New York and the Niagara frontier. The high-speed freight wagons on these runs carry the caption "Overnight to Main Street," providing an excellent example for British railways to follow.

Publications Received

Railway Reconstruction in Italy, September, 1943-January, 1946. Rome: The Central Mediterranean Force. 12 in. x 8½ in. 228 pp. profusely illustrated, + 43 Statistical Tables, and 48 folding plates. No price stated.—Although official publications must necessarily strike a strictly impartial note, it would be difficult to imagine a more adequate tribute to the work of the Allied Forces in rehabilitating the railways of Italy than is paid by this comprehensive report. The magnitude of the task accomplished by the British, Dominion, and Indian Forces may be gauged when it is noted that between September, 1943, and January, 1946, approximately 2,450 miles of track, and 83 tunnels of an aggregate length of 12,000 ft., were

rehabilitated and re-opened for traffic; 490 bridges and viaducts were reconstructed; and more than 2½ million cu. yd. of earthwork were involved in the clearance works. In addition, some 230 miles of complete track were required for deviations, depots, and sidings, and 280 miles of single rail were used for track repairs. Of exceptional interest to civil engineers are the illustrations and folding plates.

High-Frequency Electric Hand Tools.—The Consolidated Pneumatic Tool Co. Ltd., 232, Dawes Road, London, S.W.6, has issued an illustrated catalogue (No. 54) dealing with its Hicycle range of electric hand tools. These tools are equipped with squirrel-cage induction motors which operate on a 200-cycle, 125-volts input. Frequency-changer sets for converting normal

a.c. and d.c. supplies to the frequency and voltage required are illustrated in the catalogue, and two typical installation diagrams are reproduced. The high-frequency supply permits a speed of 12,000 r.p.m., with a speed reduction of not more than 10 per cent. on normal loads, as against a maximum of 3,000 r.p.m. and a drop of nearly 50 per cent. on load with a 50-cycle 3-phase motor, and four times the power is obtained from a given size of machine. A high power-to-weight ratio is achieved by the constant rotor speed. In addition, the lower operating voltage contributes to the safety of the operator. Among the tools in the Hicycle range are drills, reamers, screwdrivers, nutrunners, and grinders. Comparisons of efficiency are given between high-frequency motors and a.c./d.c. or compressed air motors.

LETTERS TO THE EDITOR

The Editor is not responsible for the opinions of correspondents)

Railway Fare Anomalies

London Passenger Transport Board,
55, Broadway, S.W.1. August 1

TO THE EDITOR OF THE RAILWAY GAZETTE

Sir,—With reference to the letter from Mr. A. R. Grierson on the subject of railway fare anomalies, which was published in your issue of July 12, you may be interested in the following reply which I have sent him:—

"I have noted your letter appearing in *The Railway Gazette* for July 12 regarding 'Railway Fare Anomalies.' With regard to the final paragraph of this letter, there is no trace in my office of any letter having been received from you at any time. If you care to furnish me with further details as to when, and to whom, the letter was sent, I will make further enquiries.

"The variations in charges, to which you refer, from Watford and Kenton to Charing Cross, are consequent upon the different fare structures applying on the main-line railways on the one hand—and the Board on the other—a difference that has been aggravated by the higher increase to which main-line fares have been subjected by order of the Minister of Transport.

"So far as the fares to Aylesbury are concerned, the fare of 7s. 9d. from Baker Street to Aylesbury is the concessional monthly return fare in operation on the main-line railways. This facility is not, however, available from tube line stations, and the fare of 11s. 8d. from Charing Cross represented the ordinary return fare. The booking clerk at Charing Cross should have advised you of the concessional fare available from Baker Street and invited you to rebook at that station.

"In these circumstances an appropriate refund will be made to you upon production of some evidence of the purchase of the ticket in question; in fact, the date and approximate time of issue would suffice.

"Upon hearing further from you I shall be happy to bring this matter to a satisfactory conclusion for you."

Yours faithfully,

J. H. BREBNER,
Chief Public Relations & Publicity Officer

Relay v. Mechanical Locking

Department of Railways, New South Wales,
Signal & Telegraph Branch, 19, York Street,
Sydney. August 2

TO THE EDITOR OF THE RAILWAY GAZETTE

Sir,—In your issue of April 5, 1946, page 371, under the heading "Signal Engineers, like Doctors, Differ," you refer to the need for setting out certain items in complete detail under several aspects—financial, technical, and operating, to mention no others—before any truly scientific comparisons can be made regarding the merits of the power interlocking frame and the panel apparatus. I assume that the power interlocking frame refers to a frame equipped with mechanical locking and operated by miniature levers, and the panel apparatus to a relay interlocking where control is exercised by small keys in groups without mechanical locking.

In laying out new power signalling schemes on the New South Wales Railways, we have given very careful consideration to the relative values of the two methods of operation, and, after exhaustive investigation and having both types in service over a period of years, have arrived at the conclusion that the relay interlocking has financial, technical, and operating advantages over the power interlocking frame. Taking first the financial aspect, in a large installation there is the saving in the number of signalmen employed, and the operating room is smaller and less costly. The operating panel, being more compact, enables one signalman to operate a relay interlocking, whereas it would require at least two or more men to handle the same number of functions in a power interlocking frame. It stands to reason that one man, having within his reach the whole of the equipment, is in a much better position to concentrate on the working than two or more signalmen. In point of operating speed, which, in these days, is an important feature of any power interlocking, the relay interlocking has an advantage over the power interlocking frame. Secondly, on the technical side, no control is exercised by a power interlocking machine that cannot more adequately be controlled by a relay frame.

The power interlocking machine has definite limitations in respect of a modern interlocking, as reliance has to be placed on the mechanical integrity of locking quadrants and electric locks on the levers, which are dependent on the human element to keep the adjustments correct and careful operation by the signalmen to avoid damage by rough usage. In the case of a relay interlocking, the relays can be adjusted accurately in the

workshop and sealed against interference. The relays are not subject to stress or strain by signalmen.

In practice, it is found that where a power interlocking frame is adopted, there is a certain amount of duplication in respect of the mechanical and electric locking. In the case of power interlocking frames, much of the circuiting is provided to implement mechanical locking, and it seems a logical development to use this same circuiting for relay interlocking purposes, thereby saving the cost of the mechanical and electrical locks. Alterations and additions to interlockings can be carried out more readily in the case of relay type interlocking, as it is simpler to alter relay circuits than to add to and re-lock an interlocking machine. Again, all forms of remote control using relay interlocking features possess very definite operating and economic advantages.

From the point of view of maintenance and liability to failure, there is very little difference between the two types of installations, except in respect of the electric locks on the interlocking machine, as mentioned above.

One ground of criticism of the relay interlocking compared with the power interlocking is that a signalman setting up a wrong move, and causing delay, can more easily conceal the fact and cause the maintenance employee considerable inconvenience. When a maintenance man is called in the case of a power interlocking, he can see the position of the lever in the frame, whereas with a relay interlocking there is no such indication, but this can be offset by light indications, so arranged as to assist in determining the location of the trouble. This, however, in respect of our relay interlockings, has never created a difficulty. Both types of apparatus require trained men, with skilled knowledge of the equipment, to maintain them; and, having this knowledge, experience has shown that they can diagnose promptly a trouble with a relay interlocking, notwithstanding the absence of a lever.

Summarised, it would appear that the advantages of the relay type interlocking frame are such as to obviate the necessity for considering power interlocking frames in future installations. It is hard to imagine any installation where a relay interlocking would not fill all the requirements more satisfactorily than a power interlocking frame.

Yours faithfully,

W. F. BARTON,
Signal & Telegraph Engineer

Coach Reconstruction in Palestine

P.O. Box 546,
Haifa, Palestine. July 22

TO THE EDITOR OF THE RAILWAY GAZETTE

Sir,—I feel everyone with a real affection for railways must feel so distressed at the picture in your June 28 issue of what was a handsome example of carriage stock reduced to a smouldering ruin, as to yearn for a "happy ending."

Would it not be, then, opportune to recall a typical instance reproduced from the annual report, year ending March, 1938,



Palestine Railways third class coach rebuilt after the body was destroyed by fire

to show that such does occur in actuality, and that bereaved underframes joyously take to the road once more with brand-new bodies built from scratch in the railway shops?

In the burned-out picture the complete immunity of the underframe will be remarked. Not only, for example, do the wooden treads of the steps to the vestibule, but even sections of the floor framing with remnants of the external teak finish, survive as often as not. The underframes and the external finish of these standard 65-ft. bodies are identical.

Yours faithfully,

A. L. JONES

The Scrap Heap

POSTMEN'S PROTEST

Three thousand London postmen at a meeting at Central Hall, Westminster, recently passed a resolution expressing determination to resist the introduction of attendances involving two separate periods each day. They agreed to await the report of a joint committee which the Postmaster-General has agreed to set up. The resolution added:—"Failing satisfaction, this meeting instructs the General Secretary to mobilise the whole of the industrial power of the union against the introduction of these attendances."

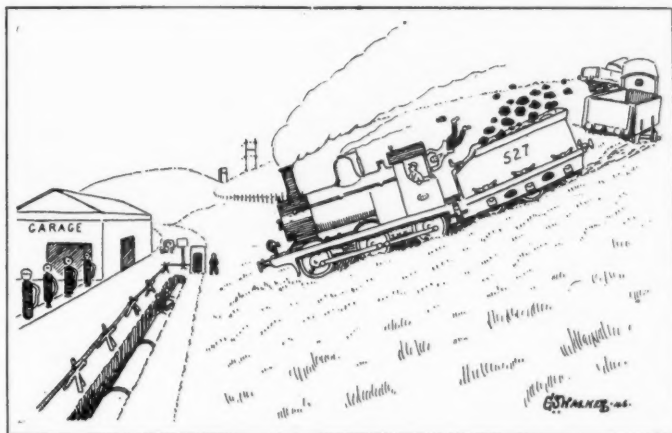
* * *

NAMED TRAINS IN THE U.S.A.

There are over a thousand named passenger and goods trains in North America, and their nomenclature forms the subject of comment on page 173. Below we give a first selection of named trains in the United States.

Name	Passenger	Railway	Scheduled run
Abraham Lincoln	Alton	...	Chicago—St. Louis
Alouette	Boston & Maine	Boston—Montreal	C.P.R.
Ann Rutledge	Alton	...	Chicago—St. Louis
Arrowhead	Chicago & North	Chicago—Duluth	...
Indian Head	Western
Special
Beaver	Southern Pacific	Portland—San Francisco	...
Black Diamond	Lehigh Valley	New York—Philadelphia—Buffalo	...
Broadway	Pennsylvania	New York—Philadelphia—Chicago	...
Limited
Buffalo Bill	Colorado & Southern	Chicago, Burlington & Quincy	...
Cape Codder	N.Y., N.H. & H.	New York—Cape Cod	...
Cavalier	Pennsylvania	New York—Cape Charles	...
Chicago Arrow	Wabash: Penn-sylvania	Detroit—Chicago	...
Choctaw Rocket	Chicago, Rock Island & Pacific	Memphis—Amarillo	...

Name	Goods	Railway	Scheduled run
Ace	Chicago & North	Duluth—Superior—Twin Cities	...
Atomic Bomb	Illinois Central	Memphis—New Orleans	...
Big Smoke	Pennsylvania	Columbus—Chicago	...
Blue Goose	Georgia	Camak—Atlanta	...
Catbird	Pennsylvania	Norfolk—Harsimus Cove	...
Cock o' the Walk	Pennsylvania	Cincinnati—Detroit	...



"No. 527 came down the bank at a fine pace, and in spite of a severe check at the foot, owing to the road being under heavy repair, ran into the (petrol) station at 10.28 sharp"

THIEVES USE TRAIN TO OPEN SAFE

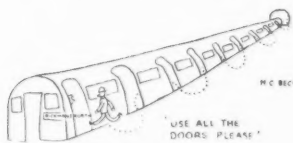
A gang of Edinburgh thieves at the week-end used a railway goods train to open a 2-cwt. safe which they had stolen.

Late at night the gang broke in and carried off the safe. Failing to open it with jemmies and hammers, they took it to the suburban railway and laid it in the centre of the track.

Early on Sunday morning a goods train hit the safe, which was ripped open. The contents, record books and documents were scattered over the track, but there was no money for the thieves. The impact tore away part of an undercarriage of the train, and soon afterwards the engine broke down.

Edinburgh C.I.D. men have no doubt that the thieves' action in putting the safe on the track was not simply to get rid of it, but to have it burst open. The gang responsible had deliberately dug a hole between the rails with the object of keeping the safe in position.—From "The Glasgow Herald."

* * *



[From "Pennyfare"]

100 YEARS AGO

From THE RAILWAY TIMES, August 15, 1846

GREAT NORTH OF SCOTLAND RAILWAY COMPANY.—NOTICE IS HEREBY GIVEN, That the First Ordinary General Meeting of the Shareholders of this Company will be held at the Company's Office, in Aberdeen, on Friday, the 21st day of August next, at Twelve o'clock noon, for the purpose of transacting the business appointed by "The Companies Clauses Consolidation (Scotland) Act, 1845," and "The Great North of Scotland Railway Act, 1846," to be done at such First Ordinary Meeting.

By order of the Directors,
THOMAS BLAIKIE, Chairman.
W. LESLIE, Interim Secretary.
75, Union-street, Aberdeen, August 6, 1846.

Know your Railroad!

Travelers and shippers will often ask you questions quite outside your department.

Naturally, no one person can know all the answers about a Railroad as large as ours. But we can all make an effort to learn where various kinds of information can be readily obtained.

Here is a point to remember. When you have to refer a patron to some other department, be sure he knows that it isn't a "brush off." Never say, "Search me!" or "Ask the Baggage-man." Take time to say, "I'm sorry, but I can't be sure of giving you the right answer to your question. However, the Baggage-man can. You'll find him at the other end of the platform."

[From "Company Manners" issued by the New York Central System]

PRIVILEGED WORKERS

Returning to the railway service from the Royal Navy, I am moved to ask whether, if the railways are nationalised, the railway servant will cease to belong to "the privileged classes."

Under private ownership the railway servant receives on the system for which he works a free residential pass and a number of free tickets per annum. Over the other companies' lines he receives any number of "privilege" ticket vouchers entitling both him and his family to travel the return journey at half the single fare.

Should this custom continue, all workers in the other services the Government proposes to nationalise could claim similar privileges. The gasworker might claim free gas and the electricity worker free light, heat, and power, while even the tax collector might urge that he should pay no taxes.

Under private ownership it has long been the custom among railway workers to refer to a conscientious railway servant as "a company's man." Under nationalisation, will he still meet with the disapproval of his fellowworkers, or will he, on the contrary, correspond to what in Russia is known as a "Hero of the Soviet," become a Stakhanovite, and set the pace with Mr. Jack Benstead cracking the whip as Railway Kommissar?—Mr. Frank Theodore, in a letter in "The Daily Telegraph."

* * *

WHY?

Why cannot seats and compartments on trains again be reserved?

Reservation of seats and compartments is a personal service, requiring strict supervision, and because we haven't the necessary staff we cannot undertake it at present.—From "The L.M.S. Answers Your Questions."

* * *

A BOOM IN BLOOMS

The fields of East Anglia have burst into a flame of colour, thanks to the efforts of the growers of Spalding, Boston, and Cambridge, who are now brightening British homes and saving foreign currency by preventing money from blooming from going abroad. From the Spalding area of Lincolnshire alone, in the first six months of the year, the L.N.E.R. carried 5,400 tons of flowers. Heaviest day was April 17, when 34 tons of flowers in 2,656 boxes went by special train from Spalding to London—5 vanloads from Spalding itself and 11 from surrounding stations. So far this year, the L.N.E.R. has carried 777,350 boxes, or 6,312 tons, of flowers from Eastern England to London and the main industrial towns of the country.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Proposed Zululand Railway

Mr. F. T. Bates, Member of the Railway Board, stated in Durban recently that there is every possibility of Northern Zululand and the Transvaal being linked by a direct railway line from Gollé to Piet Retief. The members of the board had arrived in Durban after an extensive tour of Zululand. The present railway connection from Gollé, in Zululand, to Johannesburg, involves a journey of about 700 miles, whereas the proposed new line would reduce this distance to about 300 miles. The proposal for this line was made by a deputation to the Minister of Transport earlier this year, as reported in *The Railway Gazette* of March 22.

The General Manager of Railways, said Mr. Bates, had recommended a survey of the proposed new route, which would bring tremendous benefits to agriculture and industry in the territory, and the Railway Board had advised the Minister of Transport to accept the General Manager's recommendation. Besides the ordinary topographical survey, an investigation of the commercial, industrial, and agricultural potentialities of the areas concerned would be made. Parliament would then decide whether the line should be built. The line would, according to a memorandum submitted some time ago to the board, open up Northern Zululand and Southern Swaziland, enabling huge tracts of land which have lain idle to be developed. Cattle, timber, and other products would have a new market on the Rand.

Timber Production Possibilities

In the area between the Hluhluwe River and the Mnyewane River there are 25,000 acres capable of producing 25,000 tons of indigenous timber for the next 10 years. There is a big demand for this timber in the furniture and allied trades. After being cleared and planted with gums, the area could, in seven to ten years, produce 1,250,000 tons of timber—a yearly output of 125,000 tons.

Mr. Bates said the board was impressed with the great development and potentialities of Zululand both in timber and sugar cane, and felt that adequate transport must be provided. The next area to be investigated by the board is Port Shepstone and its environs on the Natal south coast.

INDIA

A "Contact" Tour

The Chief Commissioner of Railways, Lt.-Colonel R. B. Emerson, and the Financial Commissioner, Mr. I. S. Puri, left Delhi on July 23 on an all-India "contact" tour, an annual feature which had been suspended since 1941 owing to the war. They will return late in August. During their tour they will visit important business and provincial centres, and meet commercial bodies and passenger and traffic relief associations.

Future of Indian Railways

Sir George Cuffe, General Manager of the B.B. & C.I.R., addressing the Rotary Club at Ajmer, dwelt on the future of Indian railways. He felt that in the past too much attention had been paid to finance policy with detriment to the industry and labour policies. Railways were the main arteries of the country and the in-

dustrialisation of India and the raising of the general standard of living depended on the building of more railways. Sir George also felt that both Government and State-owned railways should be brought under one management and that communal recruitment to the railways should be abolished.

New Third Class Coach

The new type of third class carriage built at the Hindustan Aircraft Factory, Bangalore [see *The Railway Gazette* of May 31 and June 14] is longer and wider than its present counterpart and provides 20 per cent. more floor space. Three tiers of bunks run on one side of a corridor, and on the other are two-berth seats. One type of compartment now on view seats 45 persons, 27 of whom can have sleeping accommodation. Another has seats for two passengers fewer. Thus 54 out of 88 passengers can lie down, as compared with 30 out of 96 in coaches now in use. Sitting space per passenger is 22 in., as against 19½ in. Each compartment has improved lavatory arrangements. The new coach, which is still in the experimental stage, is coloured green and silver.

Military Escorts for N.-W.R. Trains

Because of the removal of railway lines near Rahimyarkhan, in Bhawalpur State, a goods train was derailed on July 3. As a result of this the N.-W.R. authorities have made arrangements to provide armed police and military guards on passenger trains. A pilot engine will precede the trains between Sukkur and Bhawalpur. Men will be drawn from the Sukkur Police, Sind Police Rifles, and Baluch Regiment.

The derailment of the goods train probably saved the lives of hundreds of passengers on the Karachi Mail and the Sind Express, proceeding in opposite directions, which were held up by the derailment. It is believed that dacoits removed the rails to cause the derailment of the two trains so that they could loot the passengers, as happened four years ago near Derolal. The fireman of the goods train was injured, but there was no loss of life.

Lawlessness on Railways

Over 125 cases of goods train hold-ups by professional gangs on the G.I.P.R. between Thakurli and Kalyan, and Kalyan and Bombay, have been reported to the police during the last seven months. Gangsters, generally armed with lathis (sticks), stopped trains by tampering with signals. Special police parties have now been posted to keep an eye on the gangs, and re-organisation of the railway police is under consideration.

There have been reports, also, of growing lawlessness on certain sections of the E.I.R., where rowdy and irresponsible elements have made it a practice to hold up trains by pulling the alarm chain. Reports have been received of railway officials being assaulted.

BURMA

New Station for Rangoon

Plans have been prepared for a new central railway station in Rangoon, to be built on the site of the present station, but having wider platforms and more convenient arrangements for the circulation of passengers. The main platform will be about 94 ft. wide, compared with 40 ft. previously, and the staircases from the overbridge will lead into the booking hall

instead of communicating directly with the most congested part of the platform as they did previously. All local traffic will be dealt with at a single island platform.

The roofing over the main platform will be of the latest type, requiring the minimum number of supporting columns. Special attention is being paid to providing cool and spacious booking halls, waiting and refreshment rooms to replace the somewhat cramped accommodation of the old station, which was built in 1912. The new station will be in the Burmese style of architecture, and the building will occupy much the same floor space as its predecessor, but the ceilings will be higher and it will be better lit.

WESTERN AUSTRALIA

Heavy Wagon Repairs

Considerable importance attaches to the programme of wagon construction, which envisages the building over 10 years of 1,300 high-sided four-wheel wagons, 200 high-sided bogie wagons, 50 covered vans, 100 brake vans, 60 coal hoppers, and 40 tankers. The numbers, however, may be varied as circumstances dictate. Eight brake vans are now being built, to be followed by 20 covered vans, and then, simultaneously, by 50 bogie wagons and 100 four-wheel wagons.

Although the department has a number of steel wagons, it is intended to use timber for bodies as much as possible in order to use a local product and to obviate the necessity, which arises with steel trucks, of sending them to Midland Junction if they are damaged in the country.

Because of the deterioration of existing stock during the war, the wagon position is serious, and the department has a big repair job on its hands. In some cases the steel underframes have deteriorated, and many wagons virtually have to be rebuilt before they can be restored to traffic. Moreover, during the war the department sold the equivalent of 304 wagons and also 15 brake vans to the Commonwealth Government for military purposes. The department is obtaining wheels and axles from the State Implement Works, but in its efforts to increase the supply of wagons it is faced with two difficulties—shortage of timber and insufficient space in the boiler shop at Midland Junction for making steel underframes. The re-organisation of the shops will take care of the space problem, and then, provided the timber is available, new wagons will come off the proposed assembly line in an increasing supply.

UNITED STATES

Five Months' Operating Results

Reports presented to the Bureau of Railway Economics of the Association of American Railroads estimate that Class I railroads in May had an estimated deficit, after interest and rentals, of \$36,000,000, compared with a net income of \$64,648,791 in May, 1945. Operating results in May were affected by the coal and railroad strikes.

In the first five months of 1946 the railroads had an estimated deficit, after interest and rentals, of \$40,000,000, compared with a net income of \$261,414,342 in the corresponding period of 1945.

Class I railroads in May, 1946, had a net railway operating deficit, before interest and rentals, of \$4,779,574, compared with a net railway operating income of \$103,633,697 in May, 1945. In the first five months of this year operating in-

come, before interest and rentals, was \$114,603,468, compared with \$448,579,005 in the same period of 1945.

Gross operating revenues in the first five months of 1946 totalled \$2,965,368,250, compared with \$3,877,377,074 in the same period of 1945, a decrease of 23.5 per cent. Operating expenses in the first five months of the year 1946 amounted to \$2,568,469,201, as compared with \$2,653,033,611 during the corresponding period of 1945, a decline of 3.2 per cent.

Sixty-nine Class 1 railroads failed to earn interest and rentals in the first five months of 1946, of which 30 were in the Eastern District, 12 in the Southern Region, and 27 in the Western District.

New York—Buffalo Freight Services

The Delaware, Lackawanna & Western restored on June 24 a fast overnight freight service between Hoboken, N.J., and Buffalo. The new train is called the "Pioneer" and is scheduled to make the 395-mile run in 9 hr. 55 min. It is hauled by a 3-unit diesel-electric locomotive, and is subject to a maximum load of 50 cars and a maximum speed of 60 m.p.h. The Hoboken—Buffalo schedule of the "Pioneer" compares with 10 hr. between New York and Buffalo by the "Pacemaker" of the New York Central over a route 436 miles in length (see *The Railway Gazette* of August 2).

CANADA

Financial Results for First Quarter

Dominion Bureau of Statistics figures show that operating revenues of Canadian railways totalled \$59,128,230 during March, as compared with \$64,689,022 in the corresponding month of 1945. The decline in March was the eighth consecutive monthly decrease as compared with a year earlier. Freight revenues totalled \$43,724,626 in March, as compared with \$47,635,601 a year ago, a decrease of 8.2 per cent., and passenger revenues were \$8,619,745, as against \$9,797,051, a drop of 12 per cent.

Operating expenses for the month were 3.3 per cent. lower, at \$50,016,411, as compared with \$51,725,556, and the operating income was reduced to \$5,556,407, as against \$9,237,782 last year. Freight traffic, measured in revenue ton-miles, declined by 3.8 per cent., and passenger-miles declined by 17.1 per cent. for a decrease in passenger train car-miles of only 14 per cent. There was an increase in the number of employees from 165,548 last year to 170,687, and the payrolls advanced slightly from \$29,304,811 to \$29,587,465.

For the three months, January to March, operating revenues declined from \$179,189,494 to \$168,268,151, operating expenses declined from \$151,443,598 to \$150,259,866, and operating income from \$18,301,499 to \$8,665,338.

Traffic Interchange Dispute

The Board of Transport Commissioners for Canada heard on June 20 in Toronto the appeal of the Pere Marquette Railway Company for a better working arrangement with the Canadian Pacific Railway at the interchange junction near Chatham, Ontario. After a 40-year "gentleman's agreement," the Pere Marquette Railway made application to the board for an order compelling the C.P.R. either to make its own deliveries of freight cars for interchange at Chatham, on a track to be designated by the Pere Marquette Railway, or to enter into an agreement with the Pere Marquette Railway to share the expense of handling such traffic.

It was stated for the Pere Marquette Railway that, although no written agreement existed, increased traffic in the Chatham area compelled the company to seek a better financial arrangement with the C.P.R. Under the present arrangement, whereby the Pere Marquette Railway delivers the C.P.R. cars, it was said to be costing the former company \$1,000 a year per shunting engine.

On behalf of the C.P.R. it was maintained that the old agreement still stood, and it was suggested that the Pere Marquette Railway had "other motives for wanting the agreement changed—to relieve their own expenses." The Superintendent of the London, Ont., district of the C.P.R., told the board that any other arrangement with the Pere Marquette Railway would not be "logically efficient," and that the C.P.R. would not consider the Pere Marquette Railway's proposals unless compelled by the board.

The Chief Commissioner of the board said some time would be needed before a decision could be handed down.

FRANCE

Increases in Railway Rates

Railway passenger fares and goods rates have been increased this month. Passenger fares are raised 15 per cent. and goods rates 35 per cent. The new fares are fr. 3 per km., first class; fr. 1.95 centimes, second class; and fr. 1.50 centimes third class. Reductions of 20 to 40 per cent. in party tickets will be allowed to groups of passengers travelling to congress or conference meetings, on pilgrimages, or workers on paid holidays.

French West African Railways

By decision of the Government the railways of French West Africa are to be taken over at an early date and operated by a Government Board, with head offices at Dakar. The board will comprise eighteen members under the presidency of the Secretary General of the colony.

Dearth of Coal for Railways

Dearth of coal in France since the liberation has imposed on the French National Railways a policy of strict economy in fuel. The railways burn 25,000 tons a day, about 15 per cent. of the total consumption of coal in the country. More coal is burnt now than before the war, the consumption per ton-mile having risen about 30 per cent. One reason for the increase is the frequent slowing and re-acceleration of trains over temporarily reconstructed bridges and sections of permanent way under repair. On the line from Paris to Cherbourg, for example, the crossing of a bridge under reconstruction involves an estimated extra consumption of 400 tons of coal a month.

Factors Increasing Coal Consumption

Long after the fighting ceased, main lines could not be used, and trains were diverted to secondary lines with less favourable grades and lighter equipment. Lighter engines were employed, often double-heading, with an increase of more than 10 per cent. in coal consumption. The S.N.C.F. rolling stock was in bad condition and a quick return of available wagons required increased shunting operations, often rendered more difficult and costly by the damaged marshalling yards. American locomotives with high rates of coal consumption had to be used for shunting in place of the specialised French types.

Many French locomotives were in poor condition and fired by inexperienced firemen, this alone accounting for

10 to 15 per cent. increase in fuel consumption. Poor firing qualities of coal sometimes add more than 30 per cent. to the increase. There is also a lack of small screened coals and briquettes. French tenders normally carry 20 per cent. of their fuel in the form of briquettes. Now they carry about 9 per cent. Although the situation has improved gradually, the S.N.C.F. estimates that it will take six to twelve months to reduce coal consumption to the 1938 rate.

Imports of Railway Material

The French National Railways Company (S.N.C.F.) continues to receive rolling stock built in the United States to the specifications of French engineers. Already 600 out of 700 2-8-2 locomotives of the "R" class ordered under the lend-lease agreement have been delivered. These engines, with tenders, transported in consignments of 16 to 40 in special cargo vessels, have been discharged at Havre, Marseilles, and Antwerp, where suitable cranes are available. They are designed for hauling fast trains at speeds of 60 to 75 m.p.h., or goods trains up to 800 tons, equivalent to 50 wagons. Bench tests of the engines at Vitry-sur-Seine recently have been completed. The class was described in *The Railway Gazette* of March 8.

Other locomotives of the same type are on order, in addition to those supplied under lend-lease terms. Official figures show that on May 31 the S.N.C.F. had received from the United States 560 steam locomotives, three diesel-electric shunting engines, and 500 flat bogie wagons. At the same time the S.N.C.F. had on order in the United States 640 steam locomotives, 97 diesel-electric shunting engines, 37,690 wagons, and 12,000 wagons in parts to be assembled in France.

From Canada the S.N.C.F. awaits delivery of 140 steam locomotives, 6,000 wagons in parts to be assembled in France, and 3,000 wagons. From England the S.N.C.F. has received 4,300 wagons and awaits delivery of 5,700 more.

AUSTRIA

Russian Claims on Railways

Justifying their claim by their recent decree concerning German-owned property in Austria, the Russians are now said to be preparing the seizure of some of the most important railway lines in Austria. Among the lines mentioned so far is the Südbahn, connecting Vienna with the South and leading via the Semmering into British-occupied Styria and thence to Yugoslavia, with a branch from Maribor for the West (Klagenfurt and Villach). The Westbahn, too, is said to be envisaged, which constitutes the most important railway connection with the West (Bavaria and Switzerland). In addition, the Nordbahn has been mentioned, that is, the main line leading from Vienna to Czechoslovakia, and constituting the main connection with Berlin and Poland.

The Russians justify their claim by pointing out that the Austrian railway system became incorporated into the German Reichsbahn after the forcible absorption of Austria, and thus has become German property in accordance with the Allied decisions of Potsdam. The British and American point of view is that those decisions covered only that property in Austria which had been German-owned or German-controlled before the *Anschluss* of 1938, since it is considered that all Austrian property which came under German control after the annexation did so in an illegal way.

Flat-Bottom Track in Great Britain

Development in flat-bottom switch-and-crossing work on the L.N.E.R.

AT present, the four British main-line railways have under experimental use flat-bottom rails, with the object of securing a track which is stiffer both in a vertical and lateral plane than is provided by the use of the customary British bull-head rail. The four companies are co-operating closely in these experiments, and thus it is only the L.N.E.R. that has had any experience so far of switch-and-crossing work in flat-bottom rail. The first two turnouts made with the new 113-lb. flat-bottom rail have now been completed, however, and are to be laid in the L.M.S.R. track at Kegworth.

It may be remembered that the first switch-and-crossing work to be used in the running lines of this country was laid in at Harringay in January, 1944. This consisted of a single turnout, in which 110-lb. British Standard flat-bottom rail was used; it was described and illustrated in *The Railway Gazette* of October 20, 1944, page 379. Throughout this turnout the rails were vertical and the switches were of a loose-heel type pivoting on cast-iron heel blocks; to avoid excessive cutting away at the foot of the switch rails these were given a $\frac{1}{4}$ -in. lift above the stock rails between the toe and heel.

Since bringing this turnout into use, the L.N.E.R. has developed an improved design for 110-lb. F.B. switch-and-crossing work which is illustrated in the accompanying drawings and photographic repro-

duction. The normal 1 in 20 rail cant or tilt is retained through the connections, and heel-less switches are used; the lifting of the switch above the stock rail has been eliminated.

The first turnout built to this design was laid in the running line in November, 1944; since then an amount of this type of flat-bottom junction work, including slips, has been put in, and to date has given entire satisfaction.

The stock rails and switch blades are tilted throughout at 1 in 20 to the vertical, with the bottom flange of the switch so planed that it will move over the horizontal surface of the slide baseplate and be housed properly against the stock rails, which are of full section. In general the switch angles, radius of switch curve, and the top planing are similar to what is usual in the case of bull-head British Standard design. The switches are straight planed and are of the heel-less type. Spring steel stretcher bars, $\frac{1}{2}$ -in. thick, similar to those commonly used with bull-head switches, are used.

In the common crossings the point and splice rails are vertical for a few feet from the nose, but are twisted to the 1 in 20 cant as soon as this can be done conveniently. The splice-rail of the crossing is housed on the foot and under the head of the point rail. The nose is $\frac{3}{8}$ in. wide, and, as in bull-head practice, there is a 3-in. extension of the foot of the point

rail to accommodate a holding down bolt. The throat gap is 2 in. in the case of all crossings of 1 in 7, and flatter, but, in crossings wider than this, the gap increases somewhat, varying with the crossing angle. Flangeways of $1\frac{1}{2}$ in. are provided, which open to $3\frac{1}{2}$ in. at the ends of the wings, and the crossings are adequately blocked by distance blocks giving web contact secured by $1\frac{1}{2}$ -in. transverse bolts.

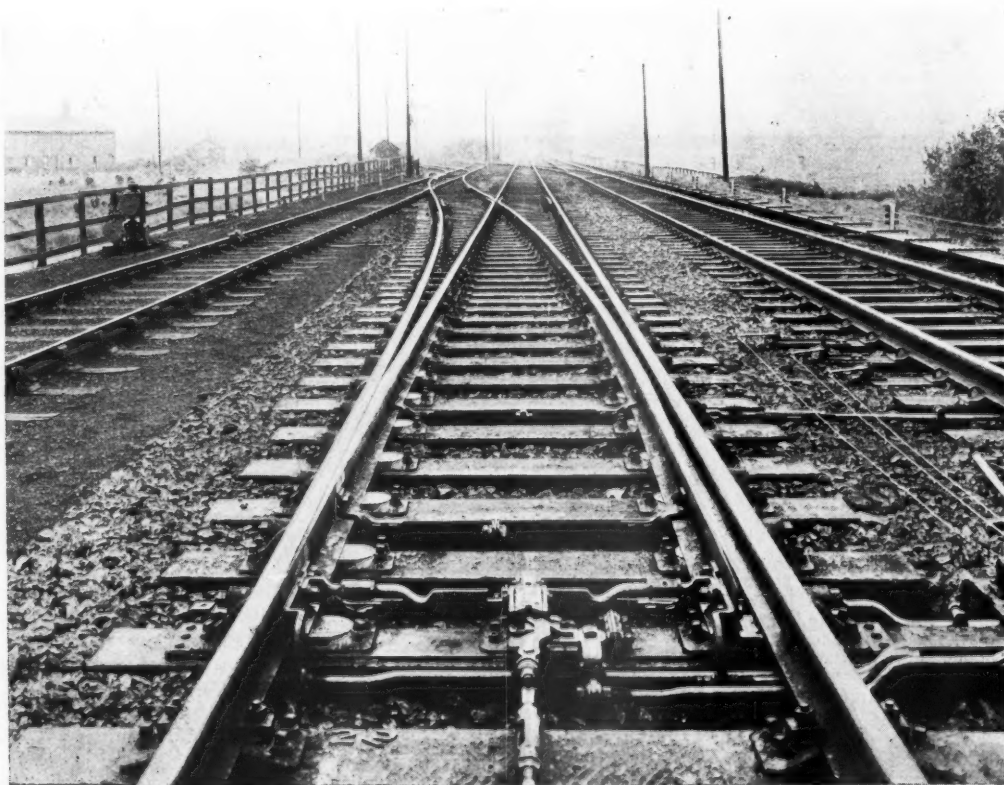
With obtuse crossings the wing and checked rails are tilted, but the point rails are vertical at the nose, and are twisted to the 1 in 20 cant as soon as they are clear of the distance blocks. The knuckle gap is 2 in. in the case of crossings from 1 in 7 to 1 in 8, but in the case of wider crossings it becomes rather larger than this, varying with the angle of the crossing.

Satisfactory Working Arrangement

In the case of double or single slips, B switches are used, but the usual free length of 24 ft. 11 in. is reduced to 18 ft. 6 in., and this has been found to be a satisfactory working arrangement.

Although the possibility of using elastic spikes in junction work is being explored by the L.N.E.R., the usual type of fastening used in this flat-bottom switch and crossing work is the hook bolt and malleable iron clip to secure the rail to the cast-iron base plates, and chair screws to fasten these plates to the timbers. Near obtuse crossings, when slips are installed, a holding-down bolt with which the standard clip can be used is provided.

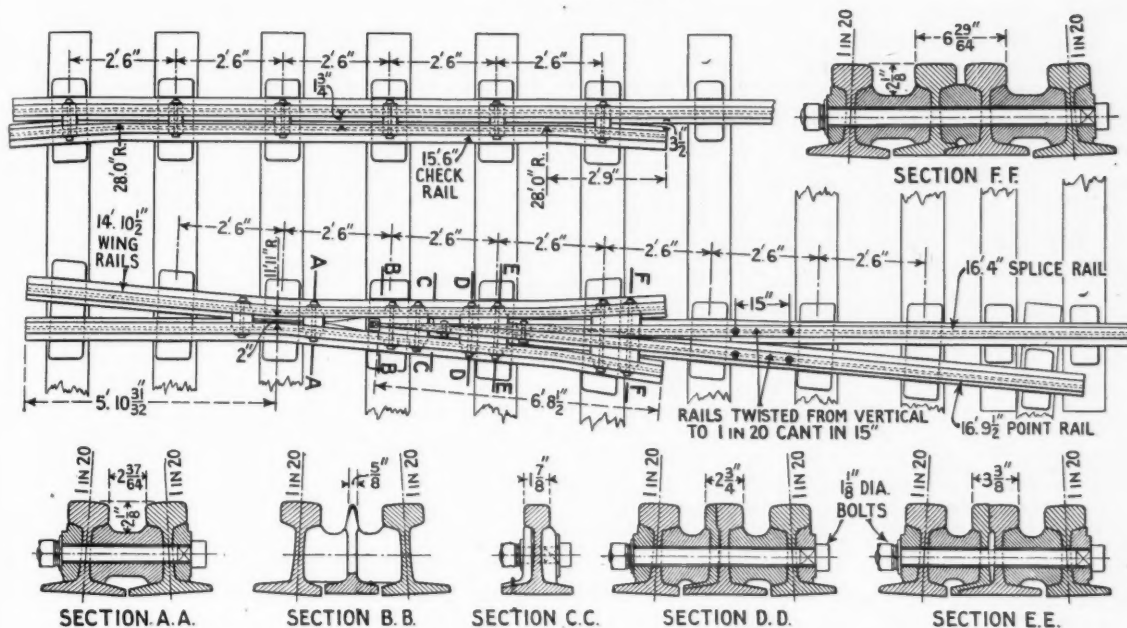
Most of the connections laid in up to the present have been made to L.N.E.R. design by Taylor Bros. (Sandiacre) Limited.



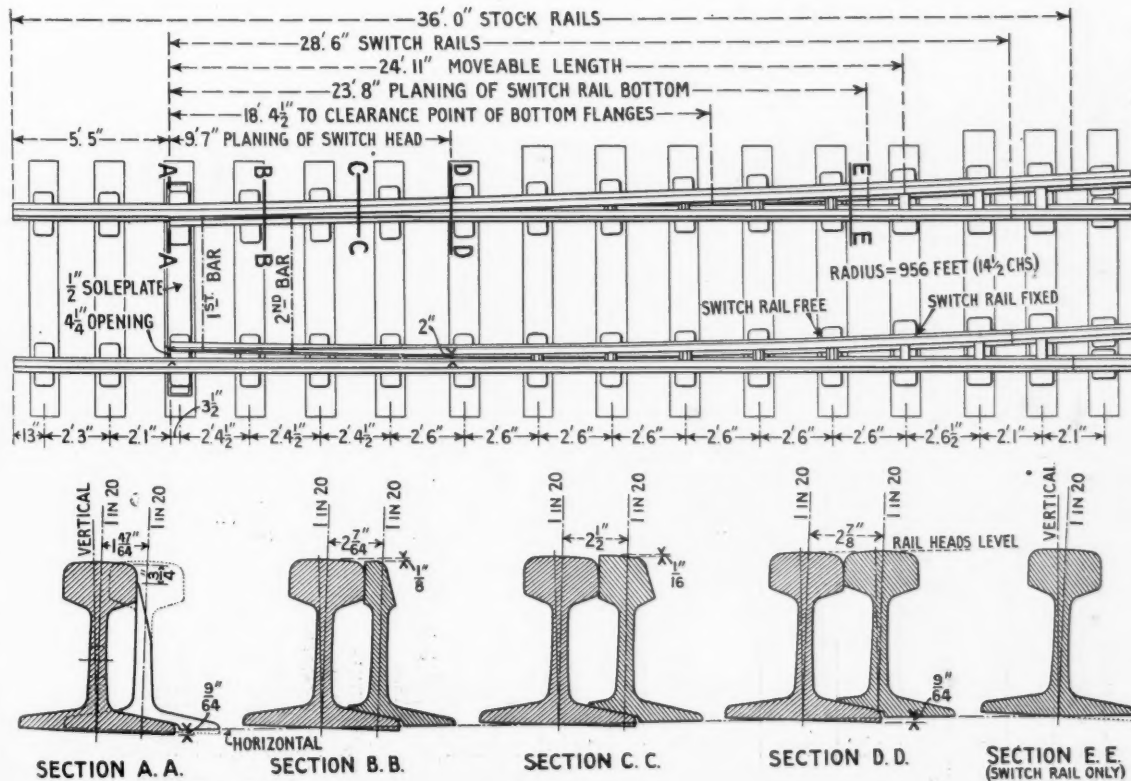
General view of the improved 110-lb. flat-bottom facing turnout laid in at Brayton, L.N.E.R., in May, 1945. The slide blocks for the switch rails will be noted

Flat-Bottom Track in Great Britain

(See article opposite)



Arrangement of 1 in 12 common crossing laid with 110-lb. B.S. flat-bottom rail. The sections indicate the dimensions and cant of the rails



Plan and sections of type "C" switch laid with 110-lb. B.S. flat-bottom rail, showing sleeper spacing and cant of rails

New Electric Locomotives for Lötschberg Railway

A Bo-Bo type developing 4,000 h.p. at the one-hour rating for a weight of 80 metric tons

THERE are a number of features of special interest in the new Bo-Bo express locomotives recently placed in service by the Lötschberg Railway, Switzerland. These locomotives were designed by the Brown Boveri Company, which was also the general contractor. The wheel arrangement consists of two 4-wheel power bogies. The total weight of the locomotive is 80 metric tons, giving an axle loading of 20 metric tons, which is the maximum permissible on Swiss main-line railways. All the weight is available for adhesion. The principal particulars are:—

Weight in running order	... 80 metric tons
Horsepower, 1-hr. rating	... 4,000 h.p.
Tractive effort, 1-hr. rating	... 14,200 kg. (31,300 lb.)
Maximum starting tractive effort	... 22,000 kg. (48,500 lb.)
Maximum speed	... 125 km.p.h. (78 m.p.h.)
Supply voltage	... 15,000 V, 16½ cycles
Number of driving motors	... 4
Diameter of driving wheels	... 1,250 mm. (4ft. 1½ in.)

The locomotives were built to comply with the operating requirements below:—

Gradient per 1,000	Train load (metric tons)	Speed (km. hr.)	Min. curve radius (metres)
10 (1 in 100)	650	90	550
15 (1 in 67)	650	75	300
27 (1 in 37)	400	75	300

The gradient of 10 in 1,000 refers to the Berne-Thun section of the Swiss Federal Railways, on which the Lötschberg Company provides part of the service. A 15 in 1,000 maximum gradient occurs on the Thun-Frutigen section, and 27 in 1,000 on the Frutigen-Brigue mountain section. The gradient profile for the Lötschberg line is given in Fig. 2. It was further specified that a train of 650 metric tons on a gradient of 15 in 1,000 (1 in 67), and of 400 metric tons on 27 in 1,000 (1 in 37), should be accelerated from rest to 75 km.p.h. in 5 min.

Bogies and Suspension

One of the bogies, with one driving motor removed, is illustrated opposite. The main frames of the bogies are of welded steel plate construction. The two-row grease-lubricated S.K.F. roller bearings for the driving axles rest in bearing shells which carry the bogies on helical springs. Inside these springs are cylindrical guides consisting of hollow guide pins attached to the side frames of the bogie, and bronze sleeves with pressed-on Silent-bloc sleeves. The cylindrical guide surfaces lie in an enclosed oil bath. A central through-bolt carries at its lower end a small

friction brake for damping the movement of the helical springs. The wheel set has practically no play in the axial direction. Horizontal impulses of the track on the wheel set are damped by the Silentblocs.

The body suspension consists essentially of a compensating beam, forming part of each bogie, mounted with a bush on a central conical pin seating in the centre of the bogie frame. This beam carries at its ends the bearers for the locomotive body, and is supported by leaf springs attached by means of links and hangers to the bogie frame. Thrust bearings are situated between the leaf springs and the compensating beam. Below the beam is a cross-stay attached at its extremities to the centres of the leaf springs.

Traction forces are transmitted through the axlebox bodies, guides, bogie frame, conical-seating centre pin, centre pin bush, compensating beam, and attached body supports, to the longitudinal side girders of the locomotive body. Horizontal cross-track forces are transmitted in the same way to the centre pin, but cannot pass directly to the compensating beam because the centre pin bush has side play. Instead, these forces are transmitted through a cover flange at the bottom of the centre pin to the cross-stay below, and thus to the suspension springs, which are connected to the bogie frames by hangers. The compensating beam thus transmits the forces of traction and impact parallel to the axis of the track, and the cross-stay, carries

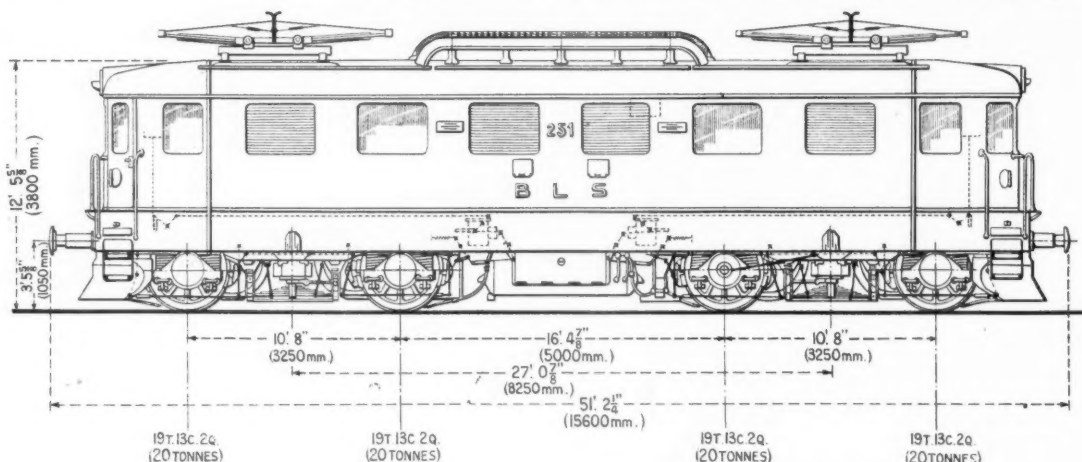


Fig. 1—Principal dimensions of new Lötschberg Railway electric locomotive

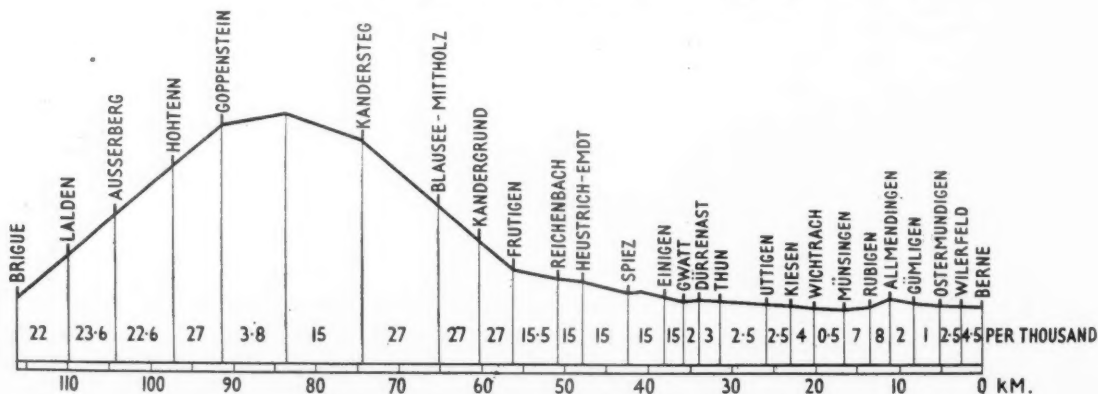
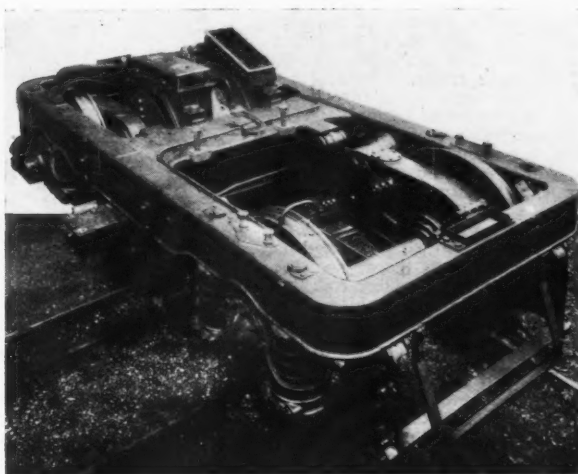


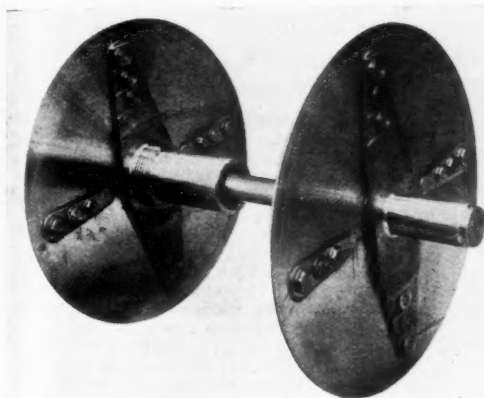
Fig. 2—Gradient profile of the Lötschberg Railway, Brigue to Berne route



Above: 1,000 h.p. motor



Right: Bogie, with one motor removed



Disc drive detached from motor assembly

only the cross-track forces, movements arising from which are partly absorbed by the hangers of the suspension springs.

The weight of the locomotive body is carried by the bearers and compensating beam through thrust blocks on to the leaf suspension springs. The special innovations of this design are the arrangement of the compensating beam below the bogie frame, and the low four-point suspension of the locomotive body. The soft springing and low position of the compensating beams have the advantage that disturbing movements of the bogies

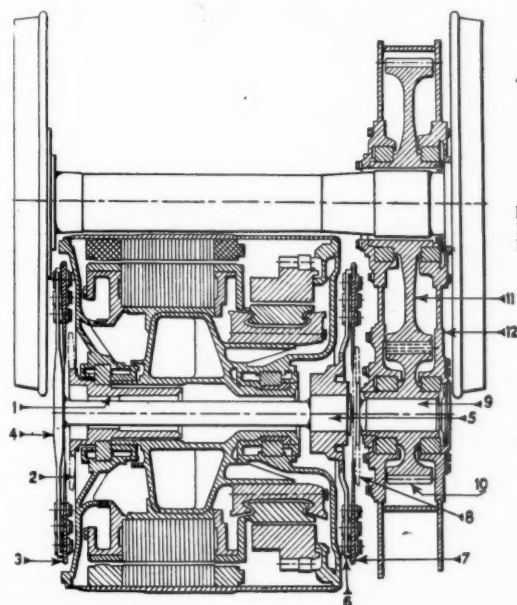
are largely excluded from the body of the locomotive. To prevent elbowing movements of the bogie, a simple friction brake is built into the head of the compensating beam; this develops only a small braking force, which, however, in conjunction with the frictional resistance of the thrust bearings on the suspension springs, is sufficient to prevent elbowing.

Motors and Flexible Drive

The driving motors are bolted directly on to the main frames of the bogies, as shown in the illustration above. A separate view of one of the motors is also reproduced. The high output of 1,000 h.p. per motor necessitated the maximum use of the available space between the driving wheels. For this reason a disc drive is used to provide the flexible coupling between motor and driving axle.

The arrangement of the drive is shown in Fig. 3. The motor torque is transmitted through the quill shaft 1, which is keyed inside the hollow shaft of the motor, to the driving arms 2 and steel disc 3, and then through the driving arms 4 to the torsion shaft 5. The arms 6, keyed to the other end of the torsion shaft, transmit the torque in a similar manner through the flexible steel disc 7 and arms 8 to the pinion shaft 9. The pinion 10 is keyed to this shaft and runs in a bearing carried by the gearbox 12. The pinion meshes with the large gearwheel 11 fixed on the driving axle, the gear ratio being 1:2.22.

The gearbox is carried by roller bear-



- 1—Quill shaft
- 2—Driving arm, integral with 1
- 3—Steel disc
- 4—Driving arm, welded to 5
- 5—Torsion shaft
- 6—Driving arm, keyed to shaft 5
- 7—Steel disc
- 8—Driving arm on pinion shaft 9
- 9—Pinion shaft
- 10—Pinion
- 11—Gearwheel
- 12—Gearbox

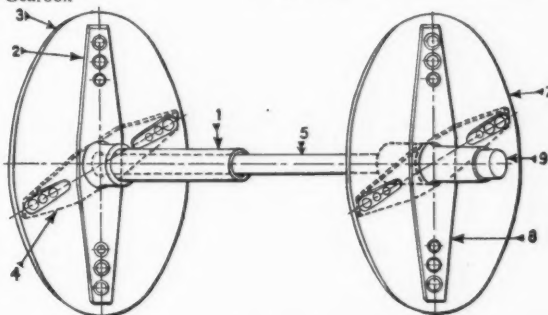


Fig. 3—Section through driving motor and disc drive

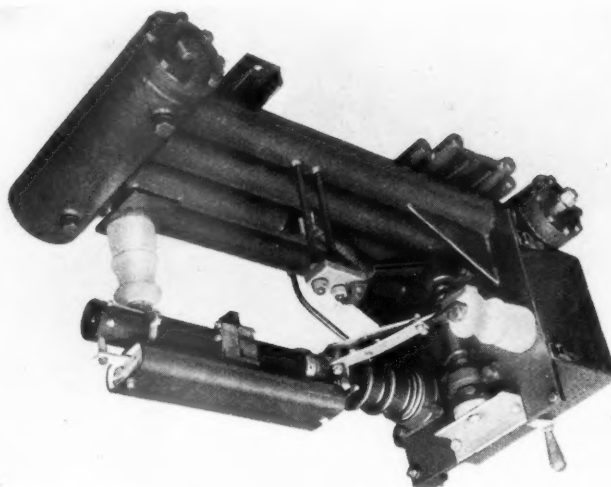
ings running on the journals of the large gearwheel, and is supported at the pinion end by a link attached to the centre cross-beam of the bogie frame. Vertical displacement of the wheel set relative to the bogie due to movement of the axlebox springs is accompanied by rise or fall of the pinion, but through a smaller distance in proportion to the ratio of the distances from the point of suspension of the gear-box to the gear centres. The torsion shaft, which is inside the hollow motor shaft, will be displaced also by the same amount as the pinion at the driving end, but remains central at the other end, thus taking up an inclined position which causes flexing of the steel discs.

Lubrication of Gearing

The gears and gearwheel bearings are lubricated with machine oil, and the motor bearings with dynamo oil. Multiple labyrinth seals are used on the roller bearings. The arrangement of the steel discs, torsion rod, and driving arms is shown in the photograph of the disc drive reproduced on page 181. The discs are of high grade steel, 1,065 mm. dia., and tapered in thickness from 7 mm. at the outer to 2 mm. at the inner radius.

The two bogies of the locomotive are cross-coupled to ensure tangential setting on curves and reduce the transverse guid-

ing forces. Radius rods are pivoted to the inner corners of the bogie frames and lead to a common point at the centre of the locomotive. A spring-loaded cross-



Compressed-air circuit breaker

connection is provided between the ends of the two triangular rod assemblies.

Electrical Equipment

The four driving motors are connected in parallel. They are 14-pole single-phase series motors of 1,000 h.p. at one hour rating. At 720 r.p.m., 395 V. terminal voltage, and with a current of 2,100 amp., each motor develops a torque of 1,000 kilogram-metres. The corresponding train speed is 76 km.p.h., and the total tractive effort about 14 metric tons, or 31,000 lb. The maximum tractive effort at starting is 48,500 lb., and each motor is then taking about 3,000 amp. Ventilation of the motors is effected by means of fans situated in the locomotive body, the cooling air being drawn in through side louvres.

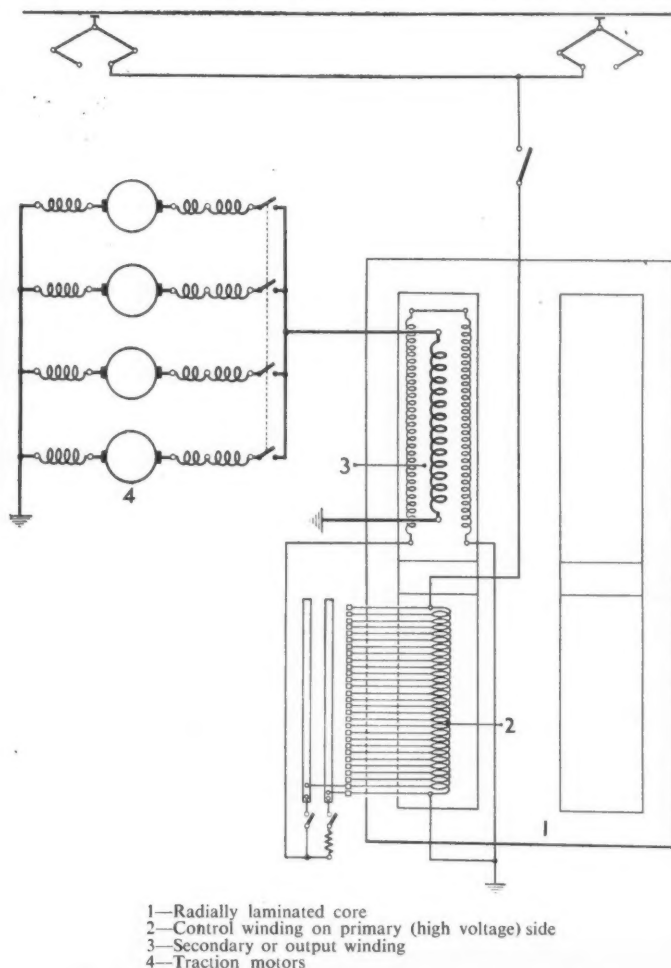
Design of Main Transformer

The main transformer is of unusual design, having a radially laminated core. This method of construction made it possible for the weight to be kept down to 9.5 metric tons. Nevertheless, the transformer is the heaviest single item of equipment in the locomotive, and it is, therefore, situated in the centre of the locomotive body. Because of the heavy motor current, voltage regulation is carried out on the high voltage side (15 kV.). A 28-step regulating apparatus is used for this purpose, and is built directly on to the transformer. A photograph is reproduced on page 186 giving a general view of the transformer and regulator, and the arrangement of the windings is shown in Fig. 4.

As the control apparatus had to be designed only for the relatively small primary current, it is relatively light. The tap-changing switch is chain-driven by a small d.c. shunt motor. The main circuit breaker is a compressed air switch of a type specially developed for locomotive service and is suspended horizontally from the roof. The electro-pneumatically operated reversing switches are located immediately above the traction motors, in order to keep the heavy-current motor cables as short as possible. They have forward, reverse, and brake positions.

Electrical Circuit

A diagram of the electrical circuit of the locomotive is given in Fig. 5. The locomotive can be braked electrically by



- 1—Radially laminated core
- 2—Control winding on primary (high voltage) side
- 3—Secondary or output winding
- 4—Traction motors

Fig. 4—Arrangement of windings on main transformer

operating the traction motors as generators. A small d.c. generator provides an excitation current which flows through the field windings of the traction motors. Under these conditions the field windings are connected in series as indicated in the small diagram of Fig. 5. The currents induced in the rotors of the traction motors are dissipated in resistances mounted on the roof.

Fig. 6 gives the calculated curves of tractive effort and motor current, and also the acceleration diagram, for a coupled load of 650 metric tons on level track. Fig. 7 is a similar diagram for a coupled load of 400 metric tons on a gradient of 27 in 1,000 (1 in 37).

Braking Systems

In addition to the electric braking already mentioned, the locomotives are fitted with automatic Westinghouse brakes and non-automatic regulating brakes. The

automatic braking can be set for normal passenger train or goods train braking, or for rapid action. With normal operation the total maximum brake-shoe pressure amounts to 85 per cent. of the weight of the locomotive; the difference between the passenger and goods train applications lies in speed of action.

The rapid brake application differs from normal passenger train braking mainly in the higher braking force, the total maximum brake-shoe pressure then amounting to about 150 per cent. of the locomotive weight. This intensified braking force cannot be used at low speeds since the wheels would be locked owing to the decrease in the coefficient of friction with decreasing speed. The rapid action is, therefore, subject to control by the train speed.

When the speed rises to 80 km.p.h., a contact on the speedometer brings into action a pneumatic valve which

admits air for braking from an air tank maintained at a pressure of 7 to 8 atmospheres. As the speed decreases, a second contact on the speedometer cuts out the rapid braking at a speed of 40 km.p.h., leaving only the ordinary passenger train braking in operation.

Anti-Slip Devices

There is also an anti-slip brake by which slipping of the wheels can be prevented. By pressing a knob, compressed air at about 1 atmosphere gauge pressure is admitted through a valve to the brake cylinder.

This anti-slip brake is operated temporarily by the driver if there is risk of slipping in conditions of heavy starting and poor adhesion. Commencement of slipping is indicated by oscillation of the pointer of the ammeter of the driving motor concerned.

Under the action of the tractive effort,

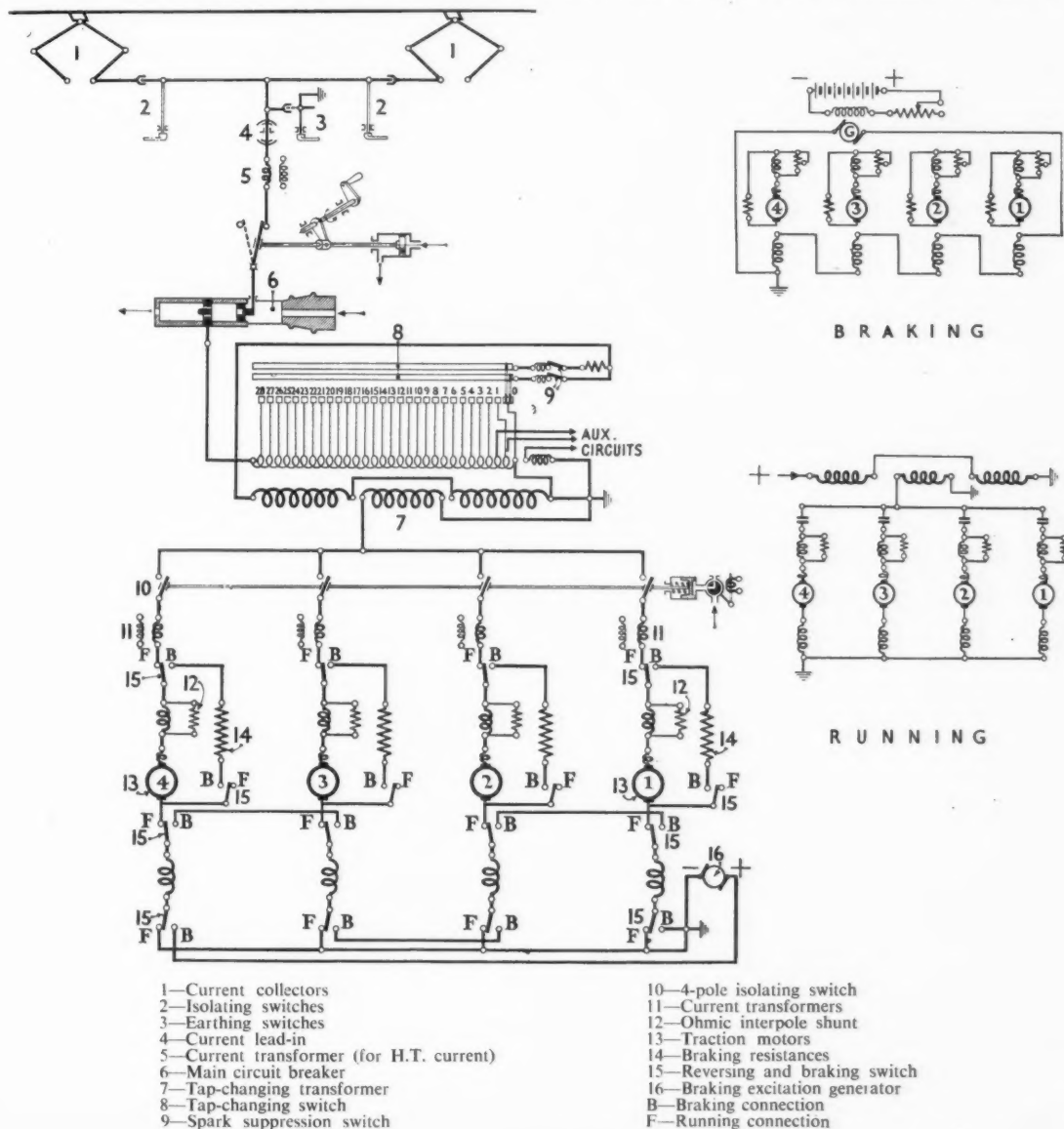


Fig. 5—Main electrical circuit

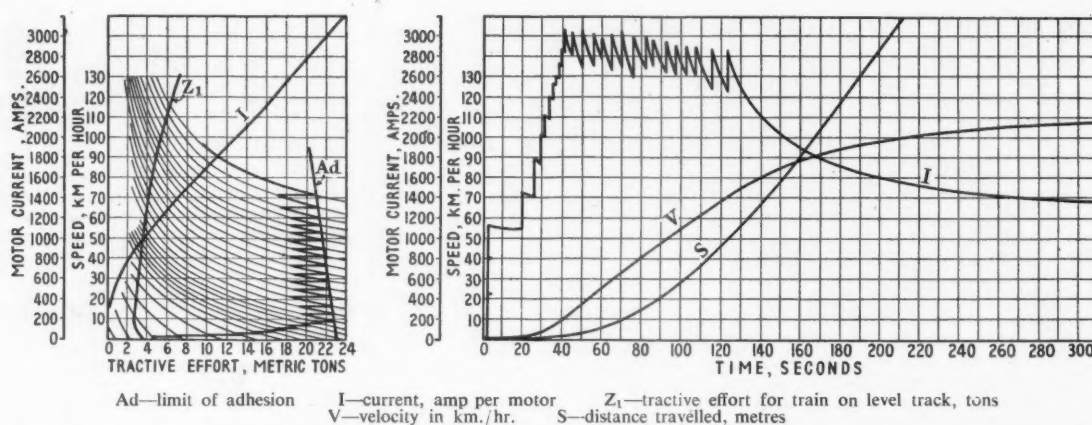


Fig. 6—Calculated acceleration diagram for locomotive with coupled load of 650 metric tons on level track

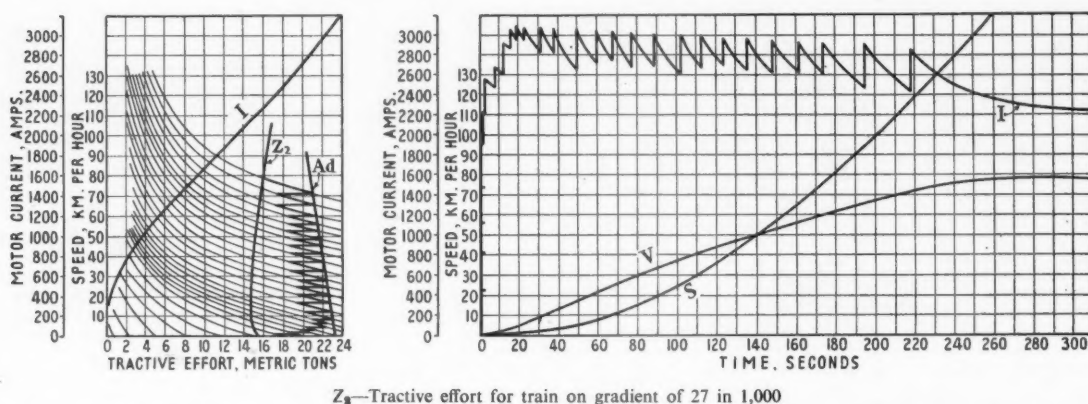


Fig. 7—Calculated acceleration diagram for coupled load of 400 metric tons on a gradient of 27 in 1,000 (1 in 37)

the load on the leading axles of the bogies may be reduced by as much as 10 per cent. This effect can be counterbalanced by a device for applying pressure to the leading axles of the bogies. Equalisation of axle loads, however, is necessary only at

heavy starting with unfavourable conditions of adhesion.

The electrical equipment of the locomotives and the flexible disc drives were manufactured by Brown Boveri & Company. The design and construction of the

mechanical components were carried out by the Schweizerischen-Lokomotiv- und Maschinenfabrik, Winterthur. We are indebted to the *Brown Boveri Review* and the *Schweizerische Bauzeitung* for the information on which this article is based.

The Lötschberg Railway in 1945

The changed conditions resulting from the cessation of hostilities in Europe in 1945 had a considerable influence on the working results of the Berne-Lötschberg-Simplon Railway for that year. Due to the marked contraction in Swiss defence traffic, there was a large decrease in the conveyance of goods over the railway, along with a decline in the conveyance of military passenger traffic. The adverse economic and transport conditions obtaining at that period in France and Italy, between which countries the railway provides a connecting link through Switzerland, prevented the revival of transit goods traffic which the company handled before the war, and there was therefore no compensation for the loss of military goods traffic. On the other hand, the U.S. leave traffic, in addition to a considerably increased number of Swiss tourists, made up for the loss of military passenger traffic.

The number of passengers conveyed over the line in 1945 rose, therefore, to 5,460,000, an increase of 173,500, but goods

totalled only 1,185,000 metric tons as compared with 2,207,000 metric tons in 1944, and with the maximum of 4,248,000 metric tons attained during the war, in 1942, when the exchange of war and civilian supplies between Germany and Italy touched its greatest intensity, and in which period the conveyance of coal from Germany was the prominent feature.

Owing to the considerable decrease in goods traffic, and despite the moderate increase in passenger traffic recorded in 1945, working receipts declined by fr. 2,870,000 to fr. 14,400,000, as against fr. 17,280,000 in 1944, a decrease of 16.6 per cent. Passenger receipts rose slightly to fr. 6,880,000, as against fr. 6,700,000 in the preceding year, and accounted for 47.8 per cent. of the total working receipts (38.8 per cent. in 1944). Goods receipts, however, dropped by no less than 34½ per cent. to fr. 5,840,000, contrasting with fr. 8,920,000 in 1944, and accounted for only 40½ per cent., as against 51.7 per cent. of the total working receipts in 1944. Since the re-

duced goods traffic entailed a considerable reduction in the number of goods trains as well as of hired wagons, working expenditure was reduced by about 19 per cent. compared with that for the preceding year, namely, to fr. 10,690,000, as against fr. 11,140,000, and this despite increases in the cost of materials, wages and salaries.

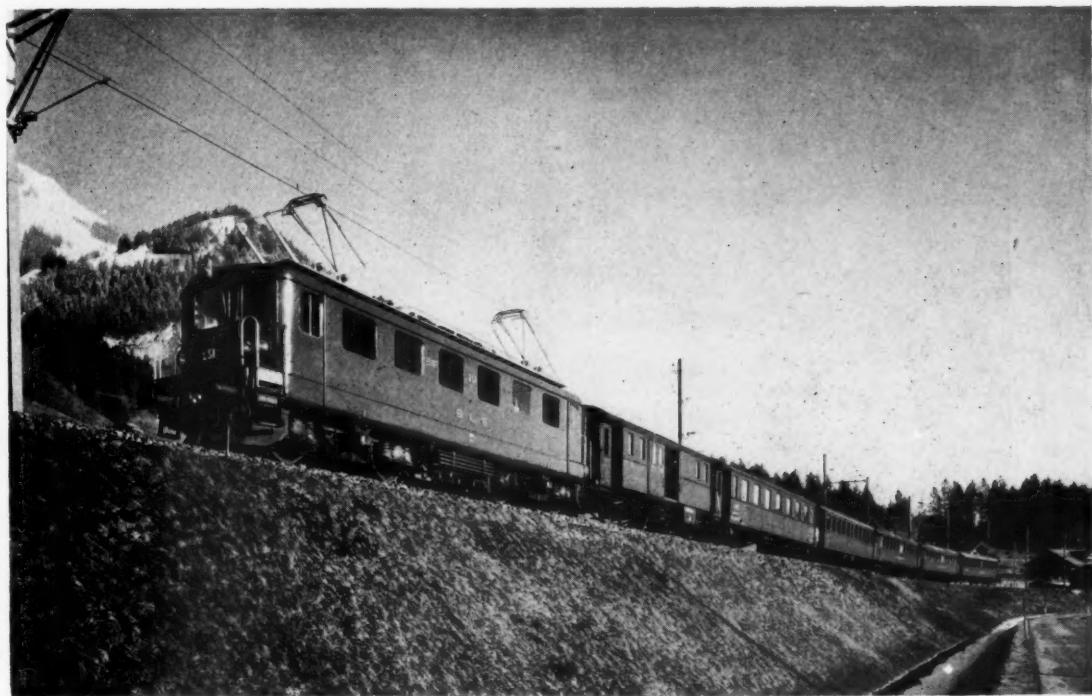
The working surplus was fr. 2,420,000 below that attained in 1944, amounting to fr. 3,720,000 against fr. 6,140,000, a drop of slightly less than 40 per cent.

SWISS FEDERAL RAILWAYS ELECTRIFICATION.—Electric traction was introduced on the single-track standard-gauge Palézieux-Moudon-Payerne line on July 19. The line branches off at Palézieux from the Lausanne-Fribourg main line; the distance to Payerne is 23½ miles (38 km.). The northern extension of the line from Payerne to Lyss (on the Berne-Bienne main line) was electrified a few months ago, and electrification of the 14.3-mile Payerne-Fribourg line (23 km.) has been taken in hand.

New Electric Locomotives for Lötschberg Railway



General view of new 4,000 h.p. Bo-Bo type electric locomotive

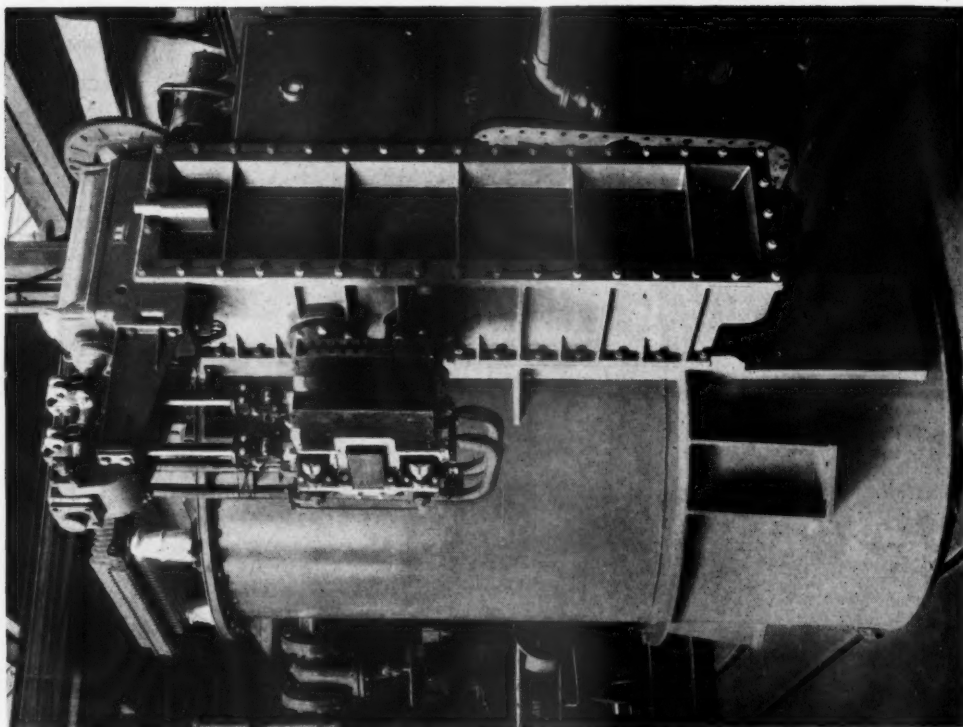


One of the locomotives in passenger service on the Lötschberg Railway

New Electric Locomotives for Lötschberg Railway

(See article on page 180)

Interior view of driver's cab in one of the new double power-bogie electric locomotives



Main transformer with 28-position tap-changing control switch mounted directly on the cylindrical casing

The New Hawkesbury River Bridge

Some notes on the defects of the old structure spanning the Hawkesbury River on the New South Wales Government Railways, and the design and construction of the new bridge.



The old and new bridges across the Hawkesbury River. The new bridge is on the right

THE New South Wales Government Railways administration was confronted with a serious problem in 1937-38 when routine inspection revealed deterioration in the piers of the Hawkesbury River Bridge, near Sydney, on the main line to Newcastle. The bridge was built in 1889, and consists of six spans of 416 ft. and one span of 414 ft., and its massive masonry piers had previously developed cracks. These cracks were found to have extended, and additional ones had appeared. The worst instance was in pier No. 4, where the rollers of the expansion bearings were no longer free to move, and the contracting girders tended to split the pier in cold weather. The only satisfactory solution of the problem was, therefore, the complete rebuilding of the bridge, which would also provide girder spans of greater strength in keeping with increasing loadings.

Though delayed during the war years, this great work has now been completed, and the new bridge was opened on July 1, as reported in the Overseas columns of our issue of July 5. Some details of the old structure will be found in an editorial note in this issue.

Structural Details

The best site for the new bridge was found to be about 200 ft. westwards or upstream of the old one, but the hilly nature of the river banks involved two new tunnels in the approaches. The original design provided for eight Pratt truss spans each 340 ft. in length, but subsequently it was considered advisable to modify this to suit the rock strata in the river bed. The final design embodies two spans each 445 ft. 8 in. long and weighing 1,650 tons; four 347-ft. 6-in. spans each weighing 1,040 tons; two 147-ft. spans each of 260 tons; and two 75-ft. reinforced concrete arched approach spans. The overall length of the structure is 2,764 ft. and the total weight of steelwork involved is 7,980 tons.

The superstructure is carried on massive piers of pleasing design founded on eight caissons each measuring 51 ft. by 29 ft.

Five of these were sunk in sand to depths ranging from 178 ft. to 183 ft. below high water level, and each weighs 15,450 tons. With the proportion of the superstructure and a train on each of the two tracks, it is estimated that a pressure of some

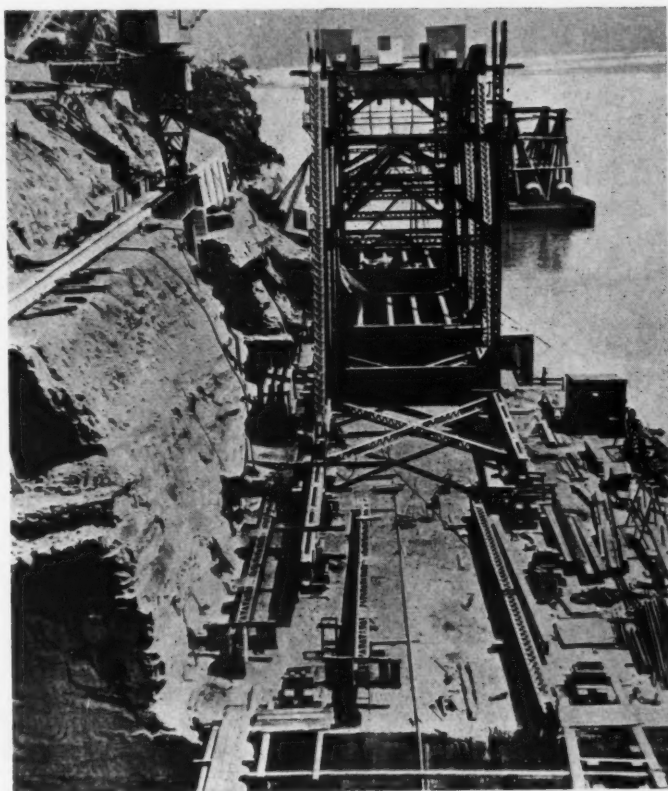
19,000 tons is exerted on the sand under and around each of these caissons. The other three caissons are founded on rock at depths of from 90 ft. to 110 ft.

Construction work began in July, 1939, and continued during the war, increased wartime traffic and the severe speed restrictions on the old bridge—originally 15 m.p.h. and latterly 5 m.p.h.—making early completion increasingly desirable. The sinking of the caissons calls for no special comment, but the placing of the 1,650-ton 445-ft. spans on the piers required special precautions and care. All the spans were erected on a prepared site on the south bank of the river above the new bridge, as shown in the illustration below, and then lifted to approximately the same height above water level as were the tops of the piers at that time. Special pontoons carrying trestle stagings of the same total height were floated in under each span, and the weight taken as the tide rose.

Floating Spans into Position

The whole assembly was then towed and warped into position on the bridge centre line at high tide, and the span lowered on to the piers with the falling tide. Three pontoons were necessary for the 445-ft. spans, each 100 ft. long by 40-ft. beam; two were used for the smaller spans. An illustration on page 188 shows one of the larger spans being floated out to site. It will be noted that one pontoon and trestle supported the centre of the span, and that the other two were beneath the second bays from each end. Each span finally came to rest on pairs of massive rocker pedestal bearings on the piers, one fixed and the other on expansion rollers.

Before the bridge was opened, tests were



The special erecting site cut out of the rocky shore, with a span in course of erection



One of the 445-ft. 1,650-ton spans being floated into position in the new bridge



A 347-ft. span being floated to site, showing details of pontoons and trestle staging

carried out by means of two sets of three "C38" class locomotives, one set on each road, and both facing north. Each of these engines in steam weighs 201 tons and its length over buffers is 76 ft. Deflection tests were taken with the six engines stopped on each pier in such a position that the maximum load (1,060 tons) would be applied as the reaction from the trusses on that pier. Other tests made included those with the six locomotives travelling over the bridge, at speeds of 5

m.p.h. and 38 m.p.h. The deflections were measured on an instrument anchored in the river bed, and the movements of the spans were traced in the usual manner.

The expansion bearings were also measured over some of the piers. The maximum deflection was $1\frac{1}{2}$ in. on No. 4 span (347 ft. 6 in.), when the two sets of three engines travelled on each track at 38 m.p.h. Live load elongations at expansion bearings of a maximum of $\frac{3}{4}$ in. were recorded on span No. 3 (347 ft.

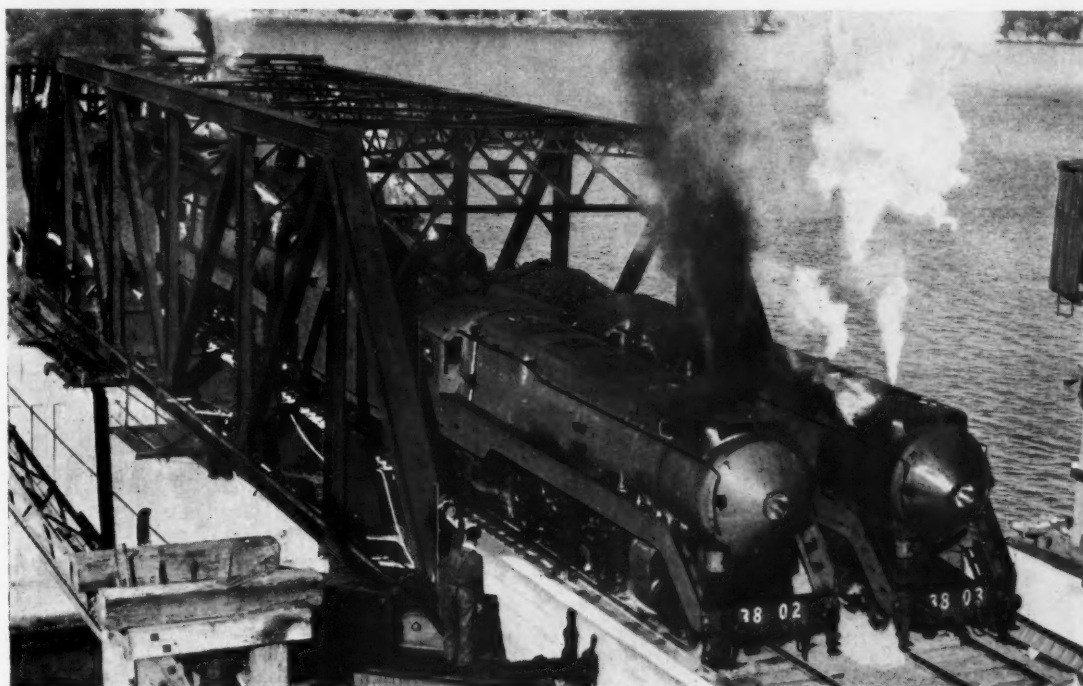
6 in.) when the six engines were stopped on each pier, and when they travelled over at 5 m.p.h. and 38 m.p.h.

One of the most remarkable features of this big job is that the whole of it has been carried out by the New South Wales Government Railways. The designs were prepared in the Chief Engineer's office, the steelwork was fabricated at Chullora, and the erection was completed by the Engineering Department. The 8,000 tons of steelwork was rolled in Australian mills.

The New Hawkesbury River Bridge

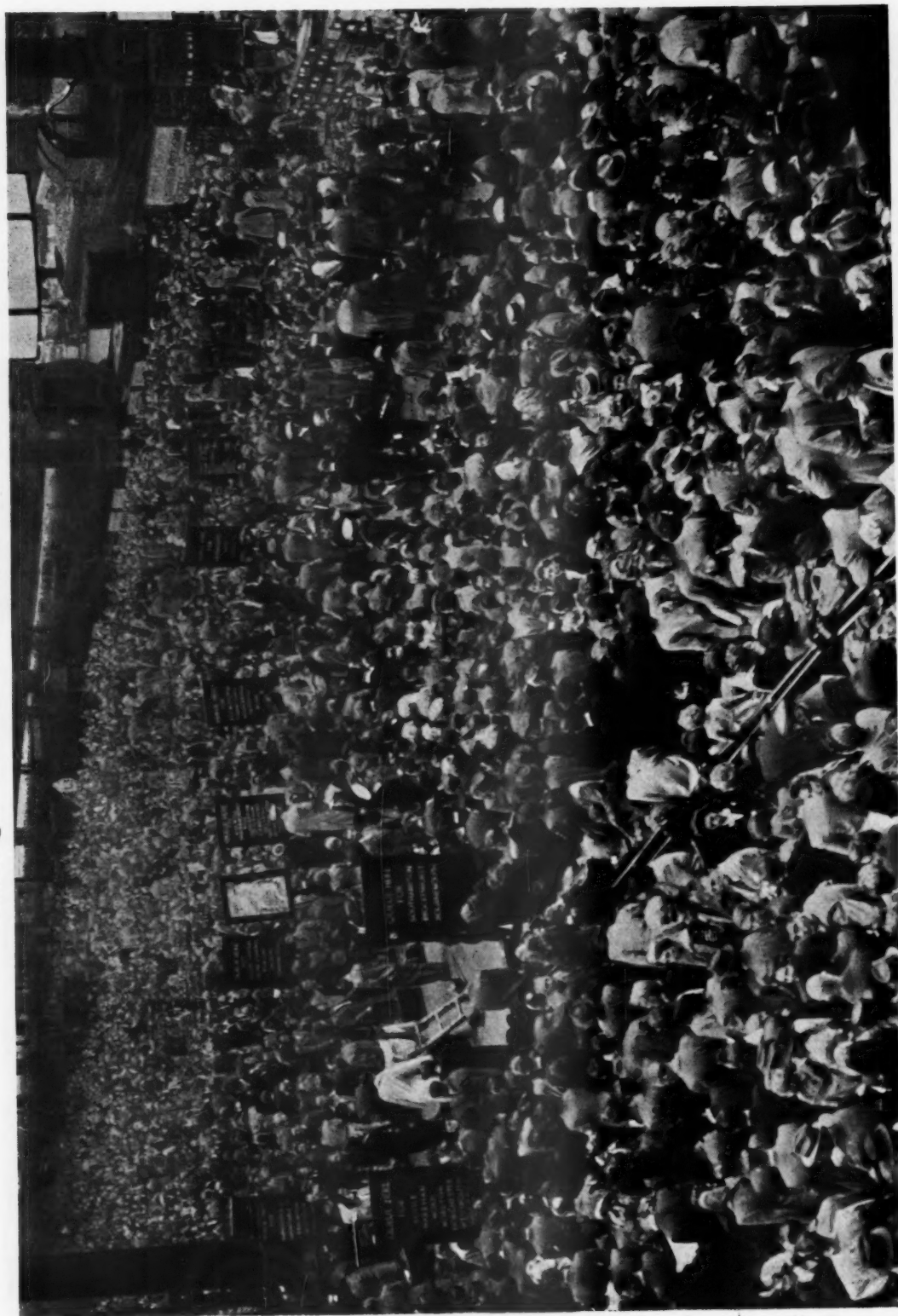


View showing the new piers. A span is seen in course of erection on the shore in the background



Two sets of three "C38" class locomotives travelling at 5 m.p.h. during tests before the opening

"Passenger Cisterns at Railway Terminals"



The above photograph of the circulating area at Waterloo Station, Southern Railway, on July 27, illustrates the statement made in the editorial note in our last week's issue, that the wartime habit of passengers arriving at stations needlessly early has had the effect of turning the circulating areas of large terminals into "passenger cisterns" inflowing from street and tube and outflowing to the trains

RAILWAY NEWS SECTION

PERSONAL

Mr. J. F. Tomlinson, Secretary for Railways & Assistant to the Commissioner of Railways, Western Australia, has retired, after 52 years' railway service, 45 of which have been in Western Australia.

Sir Montague Eddy has been appointed a member of the executive of the British Council. He is Chairman of the British-Argentine Railway Council.

The following are among those recently notified in *The London Gazette*, under the heading of Regular Army, as having been promoted Colonels: Lt-Colonel (temporary Brigadier) C. G. B. Greaves, from R.E., and Lt-Colonel R. B. Emerson, from R.E. Colonel Emerson is Chief Commissioner of Railways, India.

The late Mr. Laurence Bernard Page, who was Solicitor to the Great Western Railway Company from 1909 to 1919, left £51,944.

Mr. Bruce H. Leeson has been appointed Director of the British Electrical & Allied Manufacturers' Association, as from October 1, in succession to Mr. V. Watlington.

Mr. R. Gresham Cooke is relinquishing his position as Secretary of the United Steel Cos. Ltd. on being appointed Director of the Society of Motor Manufacturers & Traders from October 1. Mr. R. Peddie will succeed Mr. Cooke as Secretary of the United Steel Companies on October 1.

CANADIAN PACIFIC RAILWAY
Mr. A. R. Ketterson, Engineer of Bridges since 1937, has retired. He has been succeeded by Mr. G. E. Shaw, Assistant Engineer of Bridges since 1941.

Mr. M. L. Duffy, General Agent for the Canadian Pacific at Liverpool (England), has retired. He has been succeeded by Mr. D. B. Watson, hitherto Assistant General Agent there.

INDIAN RAILWAY STAFF CHANGES
Mr. W. R. Maunder, Chief Engineer, B.B.C.I.R., has been granted two years' leave preparatory to retirement as from March 8.

On return from leave, Mr. R. de K. Maynard has resumed charge as General Manager, M.S.M.R., with effect from July 1.

Mr. T. Stephenson, Chief Commercial Manager, M.S.M.R., has been granted 24 months' leave preparatory to retirement as from April 1.

Mr. H. H. Cooper, Chief Mechanical Engineer, N.W.R., has been granted 24 years' leave preparatory to retirement as from May 12.

Mr. A. J. Baker has been appointed to officiate as Chief Mechanical Engineer, S.I.R.

We regret to record the accidental death from drowning at Cyprus, on August 5, at the age of 20, of Lieutenant the Hon. Robert Douglas Collier, Hampshire Regiment, only son of Lord Monkswell.

Mr. Kenelm Kerr, O.B.E., Assistant General Manager (Staff), L.N.E.R., who has retired, has held that position since 1923. He was educated at Merchant Taylors' School, London, and Trinity College, Cambridge, and began his business career in the Secretary's Office of the General Post Office in 1904. Before severing his connection with the Civil Service in 1912, Mr. Kerr became Principal Private Secretary to the Postmaster-General

staff, and the agreement in respect of Machinery of Negotiation for Railway Staff (an agreement probably more comprehensive than anything of its kind).

Mr. William Hood, Officiating General Manager, Great Indian Peninsula Railway, and Mr. J. E. Jack, Officiating Deputy General Manager (Works), Great Indian Peninsula Railway, are among those recently transferred from associate membership to membership of the Institution of Civil Engineers.

Mr. R. B. McColl has been appointed President, in addition to his duties as Chairman, of the Beaumont Iron Works Company (subsidiary of the American Locomotive Company in Beaumont, Texas), and Mr. James F. Baldwin becomes Manager. The appointments are subsequent to the retirement of Mr. A. I. Brainard, the President. Mr. McColl is President of the American Locomotive Company.

INSTITUTION OF MECHANICAL ENGINEERS

Among those recently transferred from associate membership to membership of the Institution of Mechanical Engineers is Mr. H. G. Ivatt, Chief Mechanical Engineer, L.M.S.R. Those elected Members include Mr. C. S. Cocks, Chief Draughtsman, C.M.E. Department, Brighton, Southern Railway. Mr. N. H. Gibbins, District Locomotive Superintendent, Sudan Railways, is among Graduates transferred to associate membership; and those elected Associate Members include Mr. H. H. C. Barton, Assistant Mechanical Engineer (Maintenance), Railways, L.P.T.B., Mr. D. J. Horan, Sudan Railways, Captain J. A. Shaw, 3 Railway Workshop Detachment, Royal Engineers, Mr. Alfred Stott, Mersey Railway, and Mr. R. B. Waddington, L.N.E.R., Hull.

Major M. P. Sells, O.B.E., M.I.Mech.E., M.I.Loco.E., M.Inst.T., who, as recorded in our August 2 issue, is relinquishing his position as Chief Mechanical Engineer, Rhodesia Railways, on medical grounds, from August 31, and is returning to Great Britain, was article to the North British Locomotive Co. Ltd. from 1907 to 1912. Subsequently he had running shed experience on the London & South Western and Lancashire & Yorkshire Railways, and in 1913 was appointed Assistant District Locomotive Superintendent, Wakefield, L.Y.R., and in 1915 Junior Assistant to the Chief Outdoor Locomotive Superintendent. In the next year he was commissioned as 2nd Lieutenant, R.E., and in 1917 was appointed Superintendent of Light Railways (Mechanical & Operating), IV Army, with the rank of Major. He was mentioned in despatches twice, and was made an O.B.E., and was commissioned in the Regular Army Reserve of Officers, R.E., in 1919. In the same year he was appointed District Locomotive Superintendent, Tanganyika Government Railways, and in 1922 became Chief Mechanical Engineer, Gold Coast



Photo]

[Lafayette

Mr. Kenelm Kerr

Assistant General Manager (Staff),
L.N.E.R., 1923-46

(now Lord Samuel). Mr. Kerr's first railway appointment was with the North Eastern Railway as Assistant to General Manager (Staff), to which he went with an extensive knowledge of staff administration. He continued on a career of staff work from which his only departure was for ten months in 1922 as Passenger Manager, N.E.R., at York, before being appointed Assistant General Manager (Staff), L.N.E.R., on amalgamation. In 1943 he took charge of all staff questions, including those connected with the managing and clerical staff, previously handled by Mr. R. Bell, who retired from the position of Assistant General Manager on May 31 of that year. Mr. Kerr has given noteworthy service to all the railways; as a member of the Railways Staff Conference and numerous other negotiating bodies of which he was Chairman for many years, he has been concerned in the many developments which have taken place in the pay and conditions of service of railway staff. He was closely connected with the standardisation of the rates of pay and conditions of employment of workshop



Major M. P. Sells

Chief Mechanical Engineer,
Rhodesia Railways, 1937-46

Government Railway. In 1926 Major Sells was appointed Chief Mechanical Engineer, Nigerian Railway; he acted as General Manager in 1934, as Assistant General Manager in 1935, and again as General Manager in 1937. During his service with the Nigerian Railway he introduced the "schedule" system of locomotive repairs at the Ebute Metta workshops, and was responsible for the replanning and extension of those workshops, as well as for the extension of the carriage and wagon workshop. He was responsible also for the re-organisation of the running section. In 1937 he was appointed Chief Mechanical Engineer, Rhodesia Railways. Major Sells is the author of the book, "How the Locomotive Works and Why." In 1935 he contributed a series of articles to *The Railway Gazette* on "The Re-organisation of the Locomotive, Carriage and Wagon Workshops of the Nigerian Railway."

Mr. James B. Thom, M.C., B.Sc., whose appointment in London as European



Mr. J. B. Thom

Appointed European Traffic Manager, London,
Canadian National Railways

Traffic Manager of the Canadian National Railways was recorded in our August 9 issue, was born in Montreal on February 23, 1893, and was educated at Upper Canada College, Toronto, and McGill University, Montreal, graduating as B.Sc., in civil engineering. In the war of 1914-18 he saw service with the Canadian Engineers in Great Britain, Belgium and France; was wounded in 1917; and was awarded the Military Cross in January, 1918. In 1919 Mr. Thom joined the Lehigh Valley Railroad as Assistant Engineer in the Valuation Department. He entered the Foreign Freight Department of the Canadian National Railways in 1924. After serving in various capacities, he has been Assistant to the Vice-President, Traffic Department, C.N.R., Montreal, since 1936.

Mr. E. A. Glayzer, who, as recorded in our August 2 issue, retires on September 30 from the position of Staff & General Assistant to Superintendent of the Line, Great Western Railway, was born in 1884.



Mr. E. A. Glayzer

Staff & General Assistant to Superintendent
of the Line, G.W.R., 1936-46

He joined that railway in 1900, taking up an appointment in the Chief Telegraph Superintendent's Office at Paddington, and shortly afterwards was transferred to the Office of the Superintendent of the Line. Subsequently he was associated with the work in connection with the introduction of the first road and rail motor-car services by the company. He has had experience in various sections of the offices and for some years acted as personal clerk to the late Mr. Charles Aldington. In that capacity he spent several weeks in different divisions in connection with special events. Mr. Glayzer was later appointed to take charge of the General Section, where a variety of special subjects had to be dealt with; and he was appointed Chief Clerk to the Superintendent of the Line in August, 1934, in which capacity he acted as Secretary to the G.W.R. Traffic Superintendents' Conference. He was appointed Staff & General Assistant in April, 1936. Mr. Glayzer has represented the Traffic Department at Sectional Council meetings,



Mr. E. A. Parnell

Appointed District Operating Manager,
Rotherham, L.M.S.R.



Mr. A. H. Madden

Appointed District Operating Manager,
Wakefield, L.M.S.R.



Mr. C. S. Longsdale

Appointed District Locomotive Superintendent,
Shrewsbury, L.M.S.R.

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and on the Clerks Examining Committee, Suggestions Committee, Lecture & Debating Society, and the Executive Council of the Staff Association.

Mr. E. A. Parnell, District Controller, Rotherham (Masborough), L.M.S.R., who, as recorded in our August 2 issue, has been appointed District Operating Manager, Rotherham, joined the Telegraph Department, Midland Railway, Derby, in 1904. In 1907 he was transferred to the experimental trainmen's relief office at Rotherham (Masborough), newly opened by Sir Cecil Paget, a venture so successful that the scheme was extended and an office built at Horns Bridge, Chesterfield, which Mr. Parnell opened in February, 1908. In June, 1908, trainmen's relief offices were opened at Melton Mowbray and at Wellingborough; after assisting with arrangements at Melton Mowbray, Mr. Parnell opened the Wellingborough office. He was transferred in the next December to Toton Sidings, and opened the train control office there in January, 1909. He went to the Central Control Office, Derby, in 1917, and was appointed Head Office Inspector for the Chief General Superintendent, L.M.S.R., on January 1, 1923. For the next five years he was employed mainly in the reorganisation of the control system of the L.M.S.R. In 1928 Mr. Parnell was appointed District Controller, Rotherham (Masborough), since when many extensions have been carried into effect in that area.

Mr. A. H. Madden, A.M.I.Loco.E., A.M.Inst.T., Assistant District Operating Manager, Leeds, L.M.S.R., who, as recorded in our August 2 issue, has been appointed District Operating Manager, Wakefield, was educated at Campbell College, Belfast. He served his apprenticeship in the shops of the Northern Counties Committee at Belfast from 1920 to 1925, and for the next two years was employed in the Drawing Office and Running Department. In 1927 he became an improver on probation, and two years later went to Hellfield Motive Power Depot as Running Shed Foreman. In 1931 he was made Head Office Mechanical Inspector at Derby and held that position for three years, during which period he was employed also on relief duties on the Midland Division. Mr. Madden was Assistant in the Office of the Divisional Superintendent of Operation, first at Manchester (1935-39) and then at Crewe (1939-40), after which he was District Locomotive Superintendent at Bank Hall (1940-41), and at Accrington (1941-43). He was appointed Assistant to Operating Manager (Motive Power), Glasgow, in September, 1943, and Assistant District Operating Manager, Leeds, in October, 1945.

Mr. C. S. Longsdale, who, as announced in our August 2 issue, has been appointed District Locomotive Superintendent, Shrewsbury, L.M.S.R., is a link with the old North Staffordshire Railway of pre-grouping days. Several members of the Longsdale family were employed in the Locomotive Department of that company. Mr. Longsdale's great-grandfather spent his working life in the locomotive works; his grandfather, Charles Henry Longsdale, was for many years Running Shed Foreman at Stoke; and his father, Thomas Henry Longsdale, was, prior to amalgamation, Locomotive Running Assistant to the Chief Mechanical Engineer, and was afterwards Motive Power Assistant for the North Staffordshire Section of the L.M.S.R. Mr. Longsdale himself entered the North

Staffordshire Railway service at Stoke in 1915, serving an apprenticeship under Mr. J. A. Hookham, then C.M.E. After a course of study in mechanical engineering at the School of Mining & Technology, Stoke-on-Trent, he worked as an Improver in the Motive Power Department. Following amalgamation he was appointed Running Shed Foreman, Brecon, in 1926. In April, 1929, after special instruction in Crewe Works, he was transferred to Holyhead as Assistant Foreman to supervise the maintenance and repair of the Caprotti-valve fitted "Claughtons" then stationed at that depot for the "Irish Mail" working. Subsequently he held appointments as Running Shed Foreman at Warwick, and Speke Junction, and was appointed Assistant District Locomotive Superintendent, Edge Hill, in 1937, and, in February this year, Assistant in the Office of the Superintendent of Motive Power, Watford, and thence to his present position as District Locomotive Superintendent, Shrewsbury.

L.P.T.B. APPOINTMENTS

The L.P.T.B. announces the appointment of Mr. S. S. Wheeler as Commercial Advertising Officer, in succession to Mr. W. Gott, who is retiring after 40 years with the Board and its predecessors.

Mr. R. J. Hitchcock, Secretary to Lord Ashfield, Chairman of the Board, has been appointed an Officer of the Board.

G.W.R. APPOINTMENT

Mr. R. W. B. Slade has been appointed by the Great Western Railway as headquarters representative in charge of race-horse traffic throughout the company's system.

NATIONAL RAILWAYS OF MEXICO

The following are the principal officers of the National Railways of Mexico:—

General Manager: Señor Pablo M. Hernandez.

Assistants to General Manager: Señores C. C. Rochin, M. S. Mayagoitia and P. C. Morales.

Operating Superintendent: Señor Alberto Garduno C.

Rolling Stock Superintendent: Señor Jose A. Jaime.

Chief Engineer: Ingeniero Camilo Piccone.

Purchasing Agent & Stores Superintendent: Señor Juan M. Velasco.

Divisional Superintendents: Señores Abel Prince, San Luis Potosi, S.L.P.; Ramon Barajas M., Aguascalientes, Ags.; Manuel Chavero, Monterrey, N.L.; Juan Mejia, Guadalajara, Jal.; Ramiro E. Martinez, Buenavista, D.F.; Pedro G. Pantoja, Monterrey, N.L.; Horacio De Echagaray, Acambaro, Gto.; P. De Leon Palacios, Buenavista, D.F.; Alberto A. Banuet, San Luis Potosi, S.L.P.; Vicente Haaz, Tierra Blanca, Ver.; R. V. Torres, Torreón, Coah.; Rafael S. Martinez, Jalapa, Ver.; A. Santillana B., Puebla, Pue.

Chief Mechanical Engineer: Señor Pedro Angelini, Buenavista.

Electric & Telegraph Engineer: Señor Bernardo E. Arias, Buenavista.

Traffic Manager: Señor Benjamin Mendez.

Passenger Assistants: Señores I. R. Malpica and F. C. Lona.

Goods Assistants: Señores R. De M. Campos and J. Gomez De Leon.

General Superintendent of Express Traffic: Señor Jose Gutierrez.

Treasurer: Señor J. Gaudalope Estrada.

Chief Accountant: Ingeniero M. Buen Abad.

Lt.-Colonel K. A. Fraser, Deputy Chief Civil Engineer, and Mr. W. K. King, Resident Engineer, Hawkesbury River Bridge, New South Wales Government Railways, have arrived on a visit to this country of approximately six weeks.

Mr. William E. Knox, Vice-President since 1944, has been elected President & General Manager of the Westinghouse Electric International Company, in succession to Mr. John W. White, who has resigned to become Director-General of Industria Electrica de Mexico.

At a recent board meeting at Helsby, the Chairman of British Insulated Callender's Cables Limited, Sir Alexander Roger, presented Mr. Arnold Turner, who is 74 and still employed at the Helsby Works as an attendant on the braiding machines, with a wallet of money and the company's token for 60 years' continuous service.

COLONIAL RAILWAY APPOINTMENTS

The Crown Agents for the Colonies have made the following first class appointments:—

Mr. J. H. Dunn to be Assistant Superintendent (Commercial), Palestine Railways.

Mr. H. Gatford to be Consulting Engineer, Railway Survey, Sierra Leone.

BRITISH EUROPEAN AND SOUTH AMERICAN AIRWAYS CORPORATIONS

The Minister of Civil Aviation has announced the names of the members of the boards of the two new corporations which have been established under section 1 (1) of the Civil Aviation Act, 1946:—

Board of the British European Airways Corporation:—Sir Harold Hartley (Chairman); Mr. Whitney Straight (Deputy-Chairman); Mr. Gerard d'Erlanger (Chief Executive); Mr. I. J. Hayward; Wing-Commander A. H. Measures.

Board of the British South American Airways Corporation:—Mr. John Booth (Chairman); Mr. J. Stephenson (Deputy-Chairman); Air Vice-Marshal D. C. T. Bennett; Sir Edwin N. Plowden; Mr. Gerald MacTier Sheppard.

L.N.E.R. APPOINTMENTS

A reorganisation of the staff work in the Superintendent's and Locomotive Running Superintendent's Departments, Southern Area, has been made, consequent on which Mr. P. Stephenson, Chief Staff Clerk, Headquarters Joint Staff Section, Edinburgh, has been appointed Staff Assistant to Superintendent, Southern Area.

Mr. H. Stopford, Acting Chief Staff Clerk, Headquarters Joint Staff Section, Southern Area, has been appointed Staff Assistant to Locomotive Running Superintendents, Southern Area.

Mr. D. Murray, Assistant Goods Manager, North Eastern Area, has been appointed Mineral Manager, Doncaster, in succession to Mr. J. E. Kitching, who retired from the service on July 31.

Mr. I. G. MacGregor, Assistant District Superintendent, Norwich, has been appointed Assistant District Superintendent, Kings Cross.

Mr. H. W. Graham, Acting Assistant District Passenger Manager, York, has been appointed Assistant District Goods Manager, Leeds.

Mr. J. D. Horgan, District Goods Manager, Middlesbrough, has been appointed District Superintendent, Hull.

Mr. B. X. Jessop, Assistant Passenger Manager, North Eastern Area, has been appointed Assistant Goods Manager, North Eastern Area.

More Oil-Burning Locomotives Are to be Used on the G.W.R.

Twenty-five for passenger service •



Showing, on the left, Lord Portal, Chairman of the Company, with Mr. F. W. Hawksworth, Chief Mechanical Engineer, G.W.R., inspecting the latest G.W.R. oil-burning locomotive

FOLLOWING on its experiments with oil-fuelled freight locomotives, the G.W.R. has converted one of its 4-6-0 mixed-traffic "Hall" class engines (No. 5955 *Garth Hall*) to oil firing, and this locomotive will be brought into service on passenger trains between Paddington and Bristol.

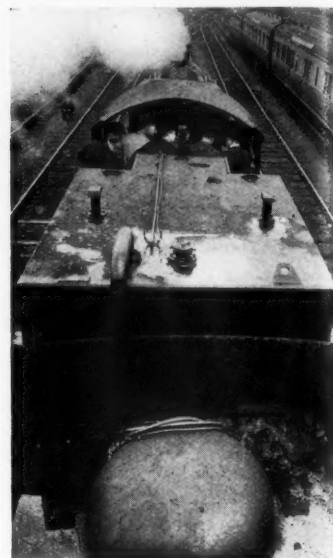
The arrangement of the oil-burning equipment and fuel tank generally is similar to that on the 2-8-0 freight locomotives, which were fully described in *The Railway*

Gazette of January 18, 1946, and ten of which are now in service in the South Wales area.

Experience has shown that the performance of an oil-fuelled locomotive equals that of a similar coal-burning locomotive in good running condition, and that a heavy freight locomotive under load consumes 6 gallons of fuel oil per mile as compared with 75 lb. of coal. These oil-burning engines are, moreover, claimed to be smokeless.

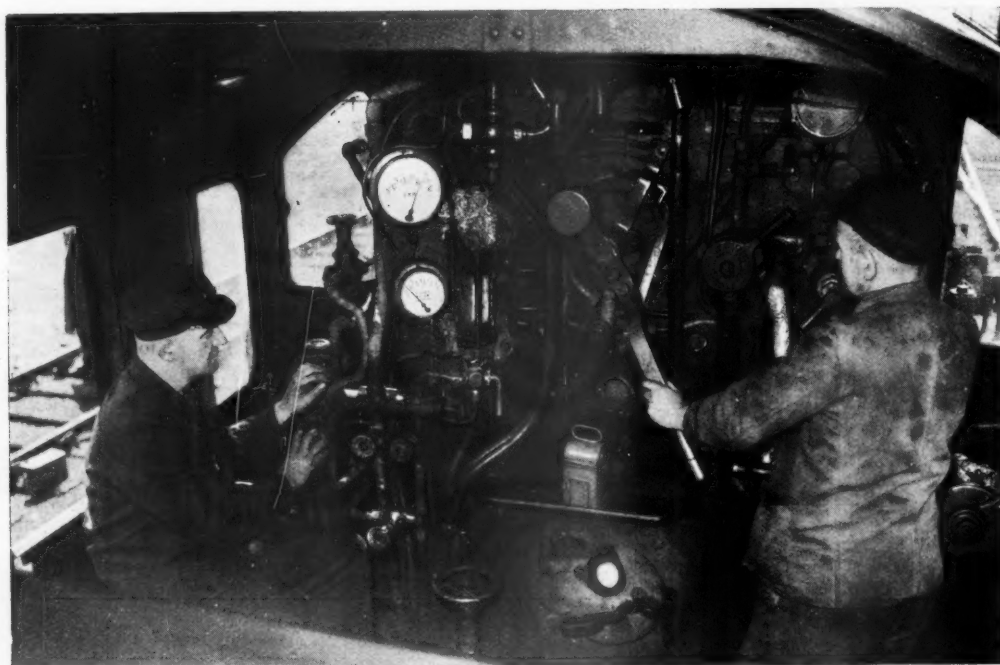
As a result of these experiments, and in view of the continued shortage of coal, the company is now proposing to convert 25 express passenger locomotives of the "Castle" class to oil burning. Each engine will carry a supply of heavy oil fuel in the tender sufficient to run up to 250 miles.

Storage tanks for re-fuelling the loco-



The engine carries in the tender heavy fuel oil for runs up to 250 miles

tives will be provided at Old Oak Common, Swindon, Bristol (Bath Road), Newton Abbot, Plymouth (Laira), Cardiff, and Landore.



In the driver's cab of one of the G.W.R. oil-burning locomotives

Parliamentary Notes

Railways (Valuation for Rating) Bill

The Railways (Valuation for Rating) Bill received the Royal Assent in the House of Lords on July 26.

Tyne Tunnel Bill

The Tyne Tunnel Bill was returned to the House of Lords from the Commons on July 26 agreed to with amendment. The amendment was considered and agreed to. The Bill received the Royal Assent in the House of Lords on July 26.

Questions in Parliament

Sleeping-Berth Reservations

Sir John Mellor (Sutton Coldfield—C.) on August 2 asked the Minister of Transport how many berths were reserved each night in sleeping cars on the L.N.E.R., on instructions, for Government nominees.

Mr. Alfred Barnes (Minister of Transport) stated in a written answer: The following statement shows the number of sleeping berths available on L.N.E.R. trains and the numbers reserved for allocation by my department to Members of Parliament and passengers sponsored by Government departments in respect of each night of the week:—

	Total berths available		Reserved for Government priority passengers	
	1st class	3rd class	1st class	3rd class
Sunday	238	296	84	29
Monday	289	316	88	46
Tuesday	283	308	88	46
Wednesday	278	296	90	46
Thursday	283	308	90	56
Friday	249	316	100	56
Saturday	116	240	27	10

G.W.R. Swindon Workshops Dispute

Captain L. D. Gammans (Hornsey—C.) on July 30 asked the Minister of Labour what action he was taking to settle the dispute at the G.W.R. workshops, Swindon, between the National Union of Railwaymen and the National Union of Vehicle Builders which had held up the completion of 150 coaches since early in January, and to which his attention had been called by Captain Peter Thorneycroft.

Mr. Ness Edwards (Parliamentary Secretary to the Ministry of Labour): I would refer Captain Gammans to the reply which the Minister gave to Captain Thorneycroft on May 28. The Unions are submitting the point in dispute for settlement through the appropriate machinery of the Trades Union Congress.

Captain Gammans: Is it a fact that this six months' strike has been going on because two rival unions cannot agree whose job it is to punch out these rivets? If the Government cannot do anything about it, may I ask whether it has considered applying to this dispute the methods with which it threatened the bakers the other day?

Mr. Edwards: This matter has been one of very great difficulty. The unions involved have agreed to submit the matter to the Trades Union Congress Disputes Committee, and I understand that a meeting is due to take place in a few days. I do not think anything ought to be said to make the position more difficult.

Captain Harold Macmillan (Bromley—C.): While appreciating the difficulties and the machinery used to stop the dispute, may I ask whether it is not a rather grave matter that, in the present shortage of rolling stock, no progress whatever will have been made between January and

August, when I understand that the dispute will come up for consideration?

Mr. Edwards: I hope that nothing I have said gives the impression that I underestimate the gravity of the position. We have been very much worried about it. We have now reached the stage where a settlement is in sight, and we think that nothing ought to be said here which will prejudice that settlement.

Captain Peter Thorneycroft (Monmouth—C.): Is it any good referring me to an answer given as long ago as May 28? The dispute has been going on ever since. Will not the Minister cause some inquiry to be made into the machinery for dealing with disputes of this kind? Would he not agree that there must be something seriously wrong with either the machinery or with his own department if a ludicrous dispute of this kind can go on for six months when the country is crying out for rolling stock?

Mr. Edwards: Men who feel keenly about their rights in industry, and whose feeling is dependent on historical events, cannot be handled in quite that way.

Lt.-Colonel F. C. Byers (Dorset Northern—Lib.): Can we take it that one of the unions concerned will be designated by the Government as a scab union?

Train Lavatories

Sir Henry Morris-Jones (Denbigh—Lib. Nat.) on August 2 asked the Minister of Transport whether he was aware of the dirty and insanitary condition of the lavatories on our main-line trains, even at the point of departure of the train; and what action he proposed to take.

Mr. Alfred Barnes stated in a written answer: I am advised that the condition of lavatories is generally satisfactory in trains leaving terminal stations, but considerable difficulty is experienced in maintaining them in a clean condition *en route*. If, however, Sir Henry Morris-Jones will inform me of any cases that have come to his notice, I will have inquiries made.

London—Durham Train

Mr. C. F. Grey (Durham—Lab.) on July 31 asked the Minister of Transport if he would arrange for the 5.30 Kings Cross train to Newcastle to stop at Durham, as had been the case up till 1939, and so help the many people of Durham who often made their journey from London.

Mr. Alfred Barnes stated in a written answer: Arrangements are being made to return this train to allow a stop as from October 7 next.

Government Expenditure on Railway-Owned Docks

Mr. S. S. Awbery (Bristol Central—Lab.) on August 2 asked the Minister of Transport what amount of money had been spent by the Government on new equipment and improvements in the respective railway-owned docks of this country; and how much of it was recoverable from these port and harbour authorities.

Mr. Alfred Barnes, in a written answer, stated: Approvals were given to expenditure on new equipment and works at railway-owned docks, for purposes connected with the war effort, by the Ministry of Transport, the War Office, the Admiralty, the Home Office, and the Ministry of Food. The total Government liability is approximately £2,650,000, so far as can be ascertained at present. A number of claims have yet to be received, however, and in the meantime it is not possible to state the final amount which will fall to be

met from Government funds. Part of the expenditure represents contributions in the form of grants towards the total costs of the works or equipment, and in these cases they become the property of the railway company concerned. In some cases, however, Government traffic using these facilities is subject to a rebate on the rates, dues, or charges normally payable. Part of the expenditure represents the total cost of the provision of new equipment or of works which was met entirely from Government sources, and in these cases the works and equipment remain the property of the Government. In many instances the companies pay hire charges for the use of Government-owned equipment and works. It is not possible to give the information desired separately in respect of each of the ports without an unjustifiable expenditure of time and effort.

Nurses' Railway Warrants

Brigadier O. L. Prior-Palmer (Worthing—C.) on August 1 asked the Minister of Labour whether, in the interests of the recruitment of nurses, the same facilities as regarded railway warrants would be extended to volunteer nurses as were given to conscript nurses to enable the former to visit their homes, which, unless those facilities were extended to them, they were unable to afford to do.

Mr. George Isaacs (Minister of Labour), in a written answer, stated: The distinction in the provision of this and other facilities available to nurses taking employment or training away from home is between those who were placed at the instance of my department and those who were engaged direct by hospitals, and was made after consultation with the National Advisory Council on Nurses & Midwives. The facilities have not been linked with compulsory direction to hospital work, which was applied in only a small minority of cases, and, since the removal of controls on June 20 last, is no longer exercised.

Sailing Tickets for Ireland

Sir Ronald Ross (Londonderry—C.) on August 1 asked the Minister of Transport whether sailing tickets for passages to and from Ireland were still necessary.

Mr. George Strauss (Parliamentary Secretary to the Ministry of Transport), in a written answer, stated: Yes, at present the demand for places on the steamers exceeds their capacity.

As from September 1, however, sailing tickets will no longer be required for passages on the services to Northern Ireland and Eire operated by the London Midland & Scottish Railway Company, and as from October 1 the requirement will be suspended on the steamers of the three principal independent companies. It may be necessary to re-introduce sailing tickets on the services for a short period over next Christmas, and, possibly, during August, 1947, but in that case the 28-day limit on applications will be extended to six weeks.

Passport Arrangements

Mr. Hector Hughes (Aberdeen North—Lab.) on July 31 asked the Secretary of State for the Home Department why the revision of passport arrangements between Great Britain and Eire and Great Britain and Northern Ireland must await the holding of the Economic & Social Council of the United Nations; and, with a view to eliminating unnecessary travel restrictions, including passports between those three countries, and in view of the amount of time, labour, and material which were daily lost by those restrictions, if he would

take immediate steps to seek such agreement and obviate such loss.

Mr. G. H. Oliver (Under-Secretary of State for Home Affairs), in a written answer, stated: The arrangements about travel between Great Britain and Ireland are not dependent on such international agreements about visas or discussions or frontier formalities as were referred to by the Minister of State on June 24. The reasons for requiring travellers to Ireland to carry documents of identity was stated in the Minister's reply on June 27 to Mrs. C. S. Ganlet (Battersea South—Lab.).

Payments to French Railways

Dr. S. W. Jeger (St. Pancras South East—Lab.) on July 30 asked the Secretary of State for War the present position of payments due to the French National Railways for carriage of British military personnel travelling on S.H.A.E.F. travel vouchers between Dieppe and Paris.

Mr. J. J. Lawson (Secretary of State for War), in a written answer, stated: The bills were received early last month by B.A.O.R. and are under examination.

L.P.T.B. Tramwaymen and Trade Union Membership

Mr. W. J. Brown (Rugby—Ind.) on July 30 asked the Minister of Labour whether he had reconsidered the case of the twelve L.P.T.B. tramwaymen, who, while drawing their pay regularly, were not allowed by the L.P.T.B. to take out their trams on the ground that they were members of one union and not members of another; and whether he would make a statement of his intentions in the matter.

Mr. Ness Edwards: I would refer Mr. Brown to the replies which the Minister gave on June 18 and July 11.

Mr. Brown: Does the Minister understand that a reply given on July 11 cannot apply to a request for reconsideration very much later in July? May I now ask him whether he is aware that one of these men is the holder of the V.C., and does he not think it an outrage that 12 men should be denied the privilege of work merely because they preferred to be members of one union rather than of another?

Mr. Edwards: Neither should the Minister of Labour become the protector of a scab union.

Mr. Henry Strauss (English Universities—C.): Has the Minister no plan whatever for ending this enforced and paid idleness at a time of national need?

Mr. Edwards: The Minister has no powers, but he will be assisted very materially if members will help him to obtain a little more discipline in industry among the unions.

Mr. Quintin Hogg (Oxford—C.): Where the right of free association is inconsistent with discipline, is the policy of the Government to stamp out that right?

Mr. Edwards: If this concerned only the right of free association, there might be some point in the supplementary question, but this is an attempt apparently to destroy the right of men to organise.

Mr. Brown: Is it not the inalienable right of every Englishman who is dissatisfied to join another, and, if he does so decide, does that constitute the other union a scab union and result in the kind of position we are discussing to-day?

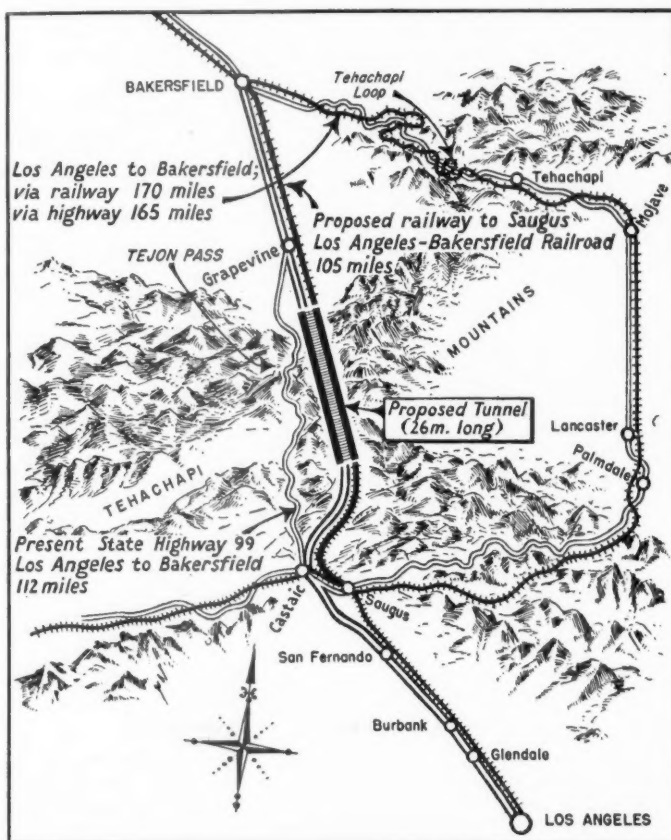
Mr. Edwards: It is an inalienable right on the part of the workers in industry to decide with whom they will work. They have that freedom, and these men have decided that, unless the other men concerned join their union, they will withdraw their labour, as they are perfectly entitled to do if they so desire.

Proposed 26-Mile Tunnel in California, U.S.A.

The California Department of Public Works now has under consideration a resolution from the State Assembly requesting a survey of the feasibility of the proposed 26-mile tunnel through the Tehachapi Mountains, between Bakersfield and Los Angeles. The passage of the resolution by the State Legislature was a result of a well-publicised plan to eliminate traffic hazards and to speed rail and highway travel, suggested by Mr. Charles W. Jones, a member of the California

given to electrifying the railway to reduce ventilation problems.

Economic justification for the project is considered ample by its sponsors, whose figures indicate a \$10,000,000 annual saving in transport costs. The tunnel would eliminate 65 miles of winding railway track, would separate lorry and motor traffic, and would reduce hold-ups due to snow and other weather conditions. The supporters of the scheme say that about 2,000,000 motor vehicles cross the Tehachapi Mountains every year, of which 20 per cent. are lorries. Because of the present winding roads, lorries take between



Map showing situation of proposed tunnel and line, and existing railway and road routes

Division of Highways. Mr. Jones offered his proposal, however, as an individual, and not as a plan backed by the highway division.

The intention is to build a 66-ft. double-deck tunnel with a 4-lane divided highway in the upper portion, and a 2-lane motor-lorry route and double railway tracks below.

The tunnel would have an 8 per cent. grade approach to the northern portal and a 6 per cent. grade at the southern end for the highway. The bore would be driven through the 5,000-ft. mountain range at an elevation of from 1,200 to 1,500 ft.

Rock formation in the area appears to be entirely granite. It is thought that all work would have to be accomplished through the two portals, with the aid of pilot tunnels. There is a probability that faults and rifts will create an additional problem, and consideration is being

four and five hours to traverse the mountain section between Castaic and Grapevine.

CLASSES IN ROAD TRANSPORT OPERATION.—The National Standing Joint Committee on Education for Road Transport Operation, set up by representatives of leading road transport organisations, has drawn up a scheme of education. The Royal Society of Arts will hold examinations in the subjects contained in the scheme, which includes four subjects to be taken in three yearly stages. Early application for enrolment and inquiries should be made direct at the institutes of the Local Education Authorities in London and the Home Counties, from which details of the days and times of meeting of the various classes and lectures can also be obtained.

Notes and News

Institute of Transport: Sussex Group.—The Council of the Institute of Transport has authorised the formation of a Sussex Group with headquarters at Brighton. The group will be a constituent part of the Southern Section of the Institute of Transport.

Locomotive and Boiler Building Works Manager for India Wanted.—The Tata Locomotive & Engineering Co. Ltd. invites applications for the post of manager of a locomotive and boiler building works now being set up at Jamshedpur, Behar, India. See Official Notices, page 199.

Transport Engineering & Equipment Co. (Leeds) Ltd.—The company announces that it is moving into a new factory, which has been built on modern lines, and is taking full advantage of up-to-date methods of production. Its new address is: Willow Lane, Lancaster (telephone: Lancaster 1511-2).

Executive Engineer Required.—An executive engineer is required by the Iraqi State Railways for a period of three years in the first instance. The salary attached to the position will be between I.D. 100 and I.D. 110 a month, according to qualifications and experience, plus high cost of living allowance of I.D. 24 (I.D. 1=£1). For full particulars see Official Notices on page 199.

Hoffmann Manufacturing Co. Ltd.—At the annual general meeting of the Hoffmann Manufacturing Co. Ltd., the Chairman, Mr. E. Hugh Armitage, said that on account of labour shortage at Chelmsford the company had decided, on Government advice, to move the manufacture of balls and rollers to a Government-owned factory near Glasgow. Other activities at Chelmsford would continue, and great progress had been made towards the installation of new manufacturing methods and labour-saving devices. In the export

markets, contact had been re-established with many of their agents, who reported a great demand for the company's products. Their engineers had visited a number of countries, with encouraging results, and visits to other countries had been planned.

Gloucester Railway Carriage & Wagon Co. Ltd.—The directors recommend the payment of a dividend for the year ending May 31, 1946, of 15 per cent., less income tax. In 1944-45 the dividend was 7½ per cent.

Institute of Transport Examinations.—Full courses for the Institute of Transport graduateship and associate membership examinations will again be available at the Ealing Technical College, Warwick Road, W.5. Classes also will be arranged for the diploma in road transport of the Royal Society of Arts. All classes will be held from 7 p.m. to 9 p.m., and a canteen will be available for students from 6.15 p.m. Enrolments should be made during the week commencing September 16.

New London Transport Bus Map.—The London Passenger Transport Board has re-issued, after a lapse of seven years, a pocket folder map of its Central Area bus services. The routes of the 234 Central bus services, which extend as far as Watford, St. Albans, and Epping in the North; Windsor, Slough, and Virginia Water in the West; Dorking, Coulsdon, and Knockholt in the South; and Dartford, Upminster, and Brentwood in the East, are shown diagrammatically after the style of the well-known Underground railway map. All the streets over which the bus routes run are named, and the map is easier to read than the semi-diagrammatic editions which were published before the war. The map is gridded into squares which are numbered and lettered, and reference is made in the index to 1,932 street and place names, including fifteen football club grounds. Copies are available on application at Underground stations, in-

quiry offices, and at 55, Broadway, S.W.1. The map was drawn by the late Mr. Fred J. H. Elston, and is printed by Waterlow & Sons Limited, of London and Dunstable.

B.E.T. Omnibus Services Limited.—The accounts for the year ended June 30, 1946, show a net profit of £192,125, which is £41,447 greater than the figure for the preceding year. This increase arises from additional income received from certain investments in associated companies. After placing £30,000 to general reserve, the directors recommend an ordinary dividend of 7 per cent., free of income tax, compared with 6½ per cent., free of income tax, last year. This will leave £61,844 to carry forward, as against £44,969 brought in.

Sale of Machine Tools.—An "on the site" sale of 400 machine tools is to be opened by the Ministry of Supply at Desford Airfield, near Leicester, on August 28. The sale will be from 10 a.m. each day until September 3, and will include capstan lathes, turret lathes, milling machines, grinding machines, drilling machines and miscellaneous types of machine tools. Any machines not disposed of during the sale will be on view at the airfield from September 4 to 10, between 10 a.m. and 4 p.m. each day, excluding Saturday and Sunday, for competitive tendering.

Names of New L.M.S.R. Pacific Locomotives.—The L.M.S.R. announces that the three standard Pacific type express locomotives to be built at Crewe Works during 1946 will be named City of St. Albans, City of Stoke-on-Trent, and City of Hereford. With the allocation of these names, the L.M.S.R. will have 20 locomotives, Nos. 6235 to 6243 inclusive and 6245 to 6255 inclusive, named after cities on its system. The first engine of the class was built in 1937 to meet the need for a high-speed service between London and Glasgow, and they hauled the pre-war

From Cathcart, Glasgow, to Cathcart, South Africa



A 4-8-2 locomotive in Cathcart Station, Cape Province, South Africa. Many locomotives of this class have been built at the Hyde Park and Queen's Park Works of the North British Locomotive Co. Ltd., for the South African Railways. The locomotive illustrated, fitted with the latest type of standard boiler, probably is one of those originally built many years ago at Queen's Park Works, which is a short distance from Cathcart, Glasgow. Deliveries of North British locomotives to the South African Railways between 1879 and 1946 total 1,756

"Coronation Scot" express over the 401.4-mile route in 6½ hr. at an average speed of 61.7 m.p.h.

London Transport Poster Guide.—Holiday visitors to London last week-end found a new map and guide posted at London Transport stations. It is a large poster full of information about London for the stranger—and the Londoner. Attractively printed in light colours with ten sketches by Miss Clodagh Sparrow of well-known London sights, the poster shows a map of the Underground railway system with lists of hotels and restaurants, theatres and cinemas, gardens and parks, art galleries, markets, stores, sports grounds, and so on, and the Underground stations serving them.

Trade Mission to China.—The membership of the United Kingdom Trade Mission which the Government intends to send to China in the early autumn has been announced by the Board of Trade. The leader, who will also be responsible for transport questions, will be Sir Leslie Boyce (Chairman of the Gloucester Railway Carriage & Wagon Co. Ltd.). The other members will be:—

Messrs. F. A. Bristow (foodstuffs), D. Maxwell Buist (heavy electrical industries), A. H. Carmichael (light engineering), Roger Heyworth (general merchandising), H. D. Morgan (consulting engineer), and F. S. Winterbottom (textiles). A trade union representative also will be chosen. The Secretary to the mission will be Mr. G. B. Blaker, of the Board of Trade.

Glyn, Mills & Company.—The statement of assets and liabilities as at June 30, 1946, shows total assets of £69,260,747, as against £70,671,927 at the corresponding date last year. The figure includes £6,694,740 in coin, bank notes, and balance at the Bank of England; £2,414,759 in cheques in transit, etc.; £12,115,700 in money at call and at short notice; £21,772,839 in investments (including £21,096,619 in British Government securities); £2,296,584 in bills discounted; and £5,000,000 in treasury deposit receipts. These items together represent 80.03 per cent. of the deposits, etc., of £62,816,246. Advances to customers and other accounts total £13,757,472, as against £12,804,185 twelve months ago.

New Club for Palestine Railways & Ports Staff



Mr. A. F. Kirby, General Manager, Palestine Railways & Ports, speaking at the inauguration ceremony in Haifa of a club for all officers and employees of the Railways & Ports Services

L.M.S.R. Train Derailed by Boulder.—On August 8 the engine and first three coaches of the 6.5 a.m. Oban-Glasgow train became derailed in the Pass of Brander by a large boulder which had fallen from the mountainside on to the track, clear of the obstruction warning wires. No passengers were injured, but the line was blocked for some time and an emergency bus service conveyed passengers between Taynult and Loch Awe.

Improved L.M.S.R. Facilities for Travel to Ireland.—An additional sailing to and from Ireland every day, the abolition of sailing tickets, and the re-introduction of one-shilling seat reservations on boat trains to and from the ports of Holyhead, Heysham, and Stranraer are announced by the L.M.S.R. to begin on September 1. Seat reservations will apply to the following trains, and will operate from the L.M.S.R. terminal stations at Euston, Holyhead, Stranraer, and Heysham:—

To Ireland	
Sundays from September 1	Weekdays from September 2
4.50 p.m. Euston to Stranraer	8.15 p.m. Euston to Holyhead
4.55 p.m. Euston to Stranraer	8.40 p.m. Euston to Holyhead
8.40 p.m. Euston to Stranraer	3.35 p.m. Euston to Heysham
Euston to Holyhead	4.40 p.m. Euston to Stranraer
	4.50 p.m. Euston to Stranraer
From Ireland	
12.30 a.m. (Sunday night—Monday morning) Holyhead to Euston	1.45 p.m. Holyhead to Euston
7 a.m. Heysham to Euston	12.30 a.m. Holyhead to Euston
	10 p.m. Stranraer to Euston
	11.20 p.m. Stranraer to Euston
	* 6.25 a.m. Heysham to Euston

* This train is Mondays excepted, and the first date on which seat reservations will be carried out is, therefore, on the train leaving Heysham on the morning of Tuesday, September 3

The additional sailings to and from Ireland are 3.45 a.m. from Holyhead (8.40 p.m. train from Euston) and 8.30 p.m. from Kingstown (12.30 a.m. train from Holyhead). It may be necessary to re-introduce the sailing tickets for a short period at Christmas-time, but even so, it is intended to extend the 28-day limit on applications to six weeks.

"Where There's a Will."—This is the title of an industrial documentary film, produced during the war by permission of the Ministry of Aircraft Production, and with the assistance of the Air Ministry and R.A.F. It records the manifold activities of the Automatic Telephone & Electric Co. Ltd., in the production of war-time and normal products, and is being exhibited privately for sales promotion purposes. The production and photography are by Leonard Card under the direction of R. A. Keir, the company's

British and Irish Railway Stocks and Shares

Stocks	Highest 1945	Lowest 1945	Prices	
			August 13, 1946	Rise/ Fall
G.W.R.				
Cons. Ord.	60½	47½	55	—
5% Con. Pref.	124½	104½	114	—
5% Red. Pref. (1950) ..	107½	101½	103½	—
5% Rt. Charge	137½	120	128½	—
5% Cons. Guar.	135½	117	122½	— 1
4% Deb.	118	106	115½	— ½
4½% Deb.	119½	108	116½	—
4½% Deb.	124½	111½	122	—
5% Deb.	138	124	133½	+ 1
2½% Deb.	83	74½	87½	+ 1
L.M.S.R.				
Ord.	33	23½	27½	+ ½
4% Pref. (1923)	65	50	53	—
4% Pref.	80½	69½	75	—
5% Red. Pref. (1951) ..	106½	99½	102½	—
4% Guar.	106½	97	100½	—
4% Deb.	110½	102	107	—
5% Red. Deb. (1952) ..	110½	103½	106½	—
L.N.E.R.				
5% Pref. Ord.	8½	5½	5½	—
4% Def. Ord.	4½	2½	2½	—
4% First Pref.	62½	49½	51	—
4% Second Pref.	33½	24½	26½	—
5% Red. Pref. (1955) ..	103	96	99	—
4% First Guar.	104½	95	99	—
4% Second Guar.	97	89½	94	+ ½
3% Deb.	91½	82½	92	—
4% Deb.	109½	101	107	—
5% Red. Deb. (1947) ..	103½	100	100	—
4½% Sinking Fund Red. Deb.	106½	103	104½	—
SOUTHERN				
Pref. Ord.	79½	63	70½	+ ½
Def. Ord.	27	20½	20	—
5% Pref.	124½	104	112	—
5% Red. Pref. (1964) ..	117	107	109½	—
5% Guar. Pref.	135½	117	123½	—
5% Red. Guar. Pref. (1957)	117	106½	111½	—
4% Deb.	117	104	113½	— ½
5% Deb.	137	124	131½	—
4% Red. Deb. (1962- 67)	112	104½	109½	—
4% Red. Deb. (1970- 80)	113½	104	109½	—
FORTH BRIDGE				
4% Deb.	106	103	106	—
4% Guar.	106	101	103	—
L.P.T.B.				
4½ "A"	125	117	125½	—
5% "A"	135	127	134½	—
3% Guar. (1967-72) ..	100	97½	104	—
5% "B"	125½	115	120½	—
5% "C"	70	58	58½	+ 2
MERSEY				
Ord.	37	31½	30	—
3% Perp. Pref.	72½	68½	72	—
4% Perp. Deb.	104½	104	105	—
3% Perp. Deb.	84	78½	82½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	34	24½	41½	—
Pref.	52½	42½	62	—
Guar.	80	68	91	— 1
Deb.	97½	87½	106	—
IRISH TRANSPORT				
Common	—	—	187½	+ 1½
3% Deb.	—	—	103½	+ ½

* Latest available quotation

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OFFICIAL NOTICES

Locomotive Building Industry in India

TATA LOCOMOTIVE & ENGINEERING CO. LTD.

APPLICATIONS are invited for the post of Manager of a locomotive and boiler building works now being set up at Jamshedpur, Behar, India.

The post carries full responsibility for the administration of the Workshops and calls for sound experience in heavy engineering or locomotive work, good executive ability and first-hand knowledge of up-to-date production methods.

Applications, which will be treated in strict confidence, should state age, experience and salary expected.—Messrs. Tata Limited, 18, Grosvenor Place, London, S.W.1.

REQUIRED by important Firm of Locomotive Manufacturers—Senior and Junior Draughtsmen with experience in Steam and/or Diesel Locomotive design. Details of experience and salary required to Box 17, *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

SECTIONED PERSPECTIVE VIEW OF LOCOMOTIVE FRONT END. A notable drawing of L.M.S.R. class "7P" 4-6-2 locomotive of the latest type. Reprinted from *The Railway Gazette*, June 15, 1945. Price 2s. 6d. Post free 2s. 8d.

BRITISH WORK ON PERSIAN RAILWAYS. The achievements and difficulties of the R.E.A. during the 15 months in which they laid the foundation for effective aid to Russia. Reprinted from *The Railway Gazette*, February 2 and 16, 1945. Price 1s. Post free 1s. 2d.

EXECUTIVE ENGINEER required by the Iraqi State Railways for three years in the first instance. Salary between I.D.100 and I.D.110 a month, according to qualifications and experience, plus high cost-of-living allowance of I.D.24 a month (I.D.1 = £1). Free passages. Provident Fund. Candidates should be Corporate Members of the Institution of Civil Engineers or hold a Civil Engineering Degree and must have had railway engineering experience.—Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/N/12852.

STATION DESIGN. A striking example of modern British practice at the important wayside station of Luton. Reprinted from *The Railway Gazette*, July 7, 1944. Price 1s. Post free 1s. 2d.

Publicity Manager, who also wrote and synchronised the sound commentary. The commentator is John Snagge. Copies of the film are available for loan to scientific film societies and similar bodies.

Accident at Euston, L.M.S.R.—Thirty-five passengers were injured slightly when the 4.15 p.m. train from Wolverhampton on August 11 ran into seven empty coaches standing in platform 7 at Euston. One of the empty coaches was forced over the buffer stops into a bookstall. The express was not damaged.

Nitrate Railways Expropriation Suspended.—The directors of the Nitrate Railways Co. Ltd. have received cabled advice from the General Manager in Chile that a Decree has been signed by the Chilean Government suspending the earlier Decree (reported in our August 2 issue), under which the Chilean State Railways were to take over the Nitrate Railways.

New G.W.R. South Wales Restaurant Car Services.—From August 12 the G.W.R. has provided restaurant car services on the 6.30 a.m. Swansea to Paddington; and between Paddington and Swansea on the 1.55 p.m. Paddington to Neyland. Beginning on Sunday, August 11, for the convenience of passengers arriving from Ireland, restaurant car facilities have been provided from Cardiff on the 4.30 a.m. Sundays only, Fishguard to Paddington relief.

London Transport Station Gardens.—Stationmaster Henry Barker, Hammer-smith Station, Metropolitan Line, has won the first prize for the best station garden on all London Transport railways. First prizes for the best gardens on the separate lines have also been awarded to: West Hampstead and Canons Park Stations (Metropolitan Line); Ealing Broadway Station (District Line); and Colindale Station (Northern Line).

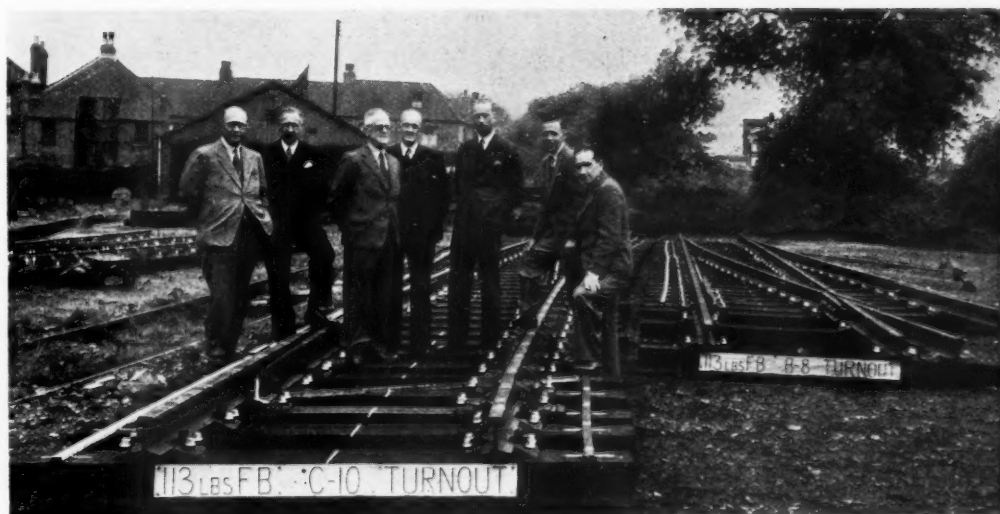
New L.M.S.R. Ships for Holyhead—Dun Laoghaire Service.—The L.M.S.R. has placed an order with Harland & Wolff Limited, Belfast, for two new passenger and cargo-carrying ships for the Holyhead and Dun Laoghaire service. Each ship will have a gross tonnage of about 5,200, and a length of nearly 400 ft., with a breadth of 54 ft. and a moulded depth of 19 ft. 6 in.; diesel engines driving twin screws will give a speed of 21 knots. The passenger capacity will be more than 2,000, and special features of the passenger facilities will include extensive seating

accommodation in addition to cabins and berths for about 450 passengers, and catering arrangements on a generous scale for both first and third class. The new ships are expected to be in service for the summer traffic in 1948.

Goods Train Derailment at Devonport, G.W.R.—Six wagons of a goods train were derailed at about 10.0 a.m. on August 3 as it was pulling out of the goods yard at Devonport, blocking the up and down lines and causing some delays to trains, which were diverted over a short section of the Southern Railway line. As soon as the down line was cleared, in about 3½ hr., single-line working was introduced.

Model Engineer Exhibition.—The twenty-first Model Engineer Exhibition will be held at the New Royal Horticultural Hall, Westminster, S.W.1, from August 22 to 31, inclusive. Model railway exhibits will be a prominent feature, although the continued shortage of materials is likely to impose some limitations. The field of railway literature will be covered by our associated journal, *The Railway Magazine*, on stand No. 30. The exhibition will be open from 11 a.m. to 9 p.m.

The First Two Turnouts in the New 113-lb. F.B. Rail



View taken in the yard of Taylor Bros. at Sandiacre, near Nottingham, showing the first two turnouts made with the new 113-lb. flat-bottom rail, which were laid in the L.M.S.R. track at Kegworth last Sunday (see editorial note on page 170)

The turnouts are seen being inspected by the members of the Designing Committee for Switches & Crossings in F.B. Rail, consisting of (left to right) Messrs. Leonard Taylor, of Taylor Bros. (Sandiacre) Limited (co-opted to the Committee to give advice on matters affecting manufacture), C. D. Morgan (G.W.R.), N. W. Swinnerton (L.M.S.R., Chairman of the Committee), F. G. Burland (L.P.T.B.), L. G. B. Rock (S.R.), C. L. Heeler (L.M.S.R.), and H. Ormiston (L.N.E.R.)

Railway Stock Market

Despite only a moderate volume of business, stock markets have shown cheerfulness, buying interest predominating in most sections with sentiment aided by the firmness maintained in British Funds, which reflected revived talk of a conversion operation in respect of Local Loans. Leading industrial shares developed good features, particularly Imperial Chemical, which, partly on Indian buying, touched their record level of 48s. 9d. before receding later to 47s. Dunlop Rubber advanced strongly to 78s. 9d. (easing later to 77s. 6d.) on the prospect of expanding supplies of rubber and a lower price for the commodity next year. Shares of other rubber manufacturing companies were also better.

Elsewhere, the upward trend in iron, coal and steel shares continued on the view that current prices more than discount the uncertainty as to nationalisation compensation, which in many cases may not be definitely decided for at least two years. Dorman Long, Guest Keen, and United Steel were among shares to show further gains, while Thomas & Baldwins responded to the statements at the meeting. With sentiment helped by the Gloucester Railway Carriage & Wagon dividend, shares of locomotive building and kindred companies have strengthened in price.

Movements in home rails were small, but buyers continued more in evidence on the view that junior stocks seem undervalued in relation to a wide range of colliery shares. The belief appears to be growing that fair nationalisation compensation for stockholders would justify market prices well above current levels for junior preference as well as ordinary stocks. It is true, of course, that there are many different bases for compensation

and that divergent opinions have been current in the market on this point; so that home railway stocks must be regarded as carrying a good measure of speculative risk.

On the other hand, the risk is probably no greater than in the case of a wide range of other equity or ordinary securities of companies threatened with nationalisation. It can be argued that in recent years, home railway dividends were helped by war conditions and the large volume of traffic resulting; but on the other hand, wartime dividends of many other groups of companies, including collieries, were well above the pre-war average.

Sentiment in regard to home rails is undoubtedly affected by the many occasions in the past when the reasonable hopes of stockholders have been disappointed. Nevertheless, there is no doubt that a strong stand would be made by the companies for a fair compensation basis, and that moreover, in the event of arbitration, the railways should be in a strong position in so far that they have never given up their rights to standard revenue, as defined in the 1921 Act. Buying interest has been rather more in evidence in respect of junior preference as well as ordinary stocks this week.

On the other hand, senior preference stocks were inclined to ease, although guaranteed stocks have attracted attention, particularly those of the L.N.E.R., as they are cumulative as to dividends, a fact to which due regard would have to be given in the event of nationalisation compensation.

Great Western ordinary has further strengthened from 54½ to 55, but the 4 per cent. debentures at 116 and the 5 per

cent. preference stock at 114 were the same as a week ago. L.M.S.R. has moved up on balance from 27 to 27½, and the 1923 preference was higher at 53½, compared with 53, while the senior preference was also better at 75.

Southern deferred remained at 20 and the preferred ordinary at 70, but the 5 per cent. preference, at 111½, was fractionally lower. L.N.E.R. second preference further strengthened from 26½ to 26½, and the first preference from 50½ to 51.

London Transport "A" and "B" stock were inclined higher; and the "C" at 58 gained two points, it being pointed out in the market that this stock has the right to higher dividends when the control agreement comes to an end, assuming that London Transport is not included in the Government's wider schemes of transport nationalisation.

Argentine rails lost ground in the absence of news of further progress in the Argentine talks, which seem likely to be much more protracted than originally had been expected. Buenos Ayres Great Southern has receded to 12½, compared with 13½ a week ago, and the 5 per cent. preference from 29½ to 29½, but the 4 per cent. debentures were a point higher on balance at 72½. Buenos Ayres Western declined from 15½ to 14½, but the 4 per cent. debentures were 69½, or a point higher on balance. Central Argentine 4 per cent. debentures, however, were a point down at 67, and the ordinary stock 8½, compared with 9½ a week ago. Nitrate Rails shares fell back sharply to 82s. 6d.; subsequently it was confirmed that the Chilean Government has suspended the Decree expropriating the railway, the terms of which were, however, regarded unfavourably in the City.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week		No. of Week	Aggregate traffic to date			Shares or Stock	Prices		
			Total this year	Inc. or dec. compared with 1944/5		Totals		Increase or decrease		Highest 1945	Lowest 1945	August 13, 1946
						1946/7	1945/6					
South & Central America												
Antofagasta ...	834	4.8.46	£ 35,690	+ £ 9,750	31	£ 998,130	£ 939,980	+ £ 58,150	Ord. Stk.	12	84	10
Arg. N.E. ...	753	27.7.46	ps. 335,400	+ ps. 38,800	4	ps. 1,247,600	ps. 1,222,000	+ ps. 25,600	"	10	54	8
Bolivar ...	174	July, 1946	4,264	+ 137	30	30,100	34,402	- 4,302	6 p.c. Deb.	8½	5½	6½
Brazil ...	2,771	3.8.46	ps. 2,126,000	+ ps. 108,000	5	ps. 10,838,000	ps. 9,725,000	+ ps. 1,113,000	Bonds	25	17	27
B.A. Pacific ...	5,080	3.8.46	ps. 3,189,000	+ ps. 71,000	5	ps. 16,752,000	ps. 15,276,000	+ ps. 1,476,000	Ord. Stk.	7	5	7
B.A.G.S. ...	1,924	3.8.46	ps. 1,139,000	+ ps. 136,000	5	ps. 5,716,000	ps. 5,420,000	+ ps. 296,000	Ord. Stk.	13½	10½	12½
B.A. Western...	3,700	3.8.46	ps. 3,091,500	+ ps. 69,700	5	ps. 15,364,115	ps. 14,793,400	+ ps. 570,715	"	12½	9½	14½
Cent. Argentine Do.	970	3.8.46	37,555	- 527	5	180,482	185,109	- 4,627	Did.	9	7	9
Costa Rica ...	262	May, 1946	32,411	+ 5,206	48	319,231	259,151	+ 60,080	Ord. Stk.	5	2½	6
Dorada ...	70	June, 1946	35,600	+ 1,820	26	186,275	182,375	+ 3,900	Stk.	16½	13	12
Entre Rios ...	808	27.7.46	ps. 457,600	+ ps. 33,800	4	ps. 1,680,500	ps. 1,722,600	+ ps. 42,100	1 Mt. Deb.	103	102	102½
G.W. of Brazil ...	1,030	3.8.46	23,200	+ 900	31	856,600	766,600	+ 90,000	Ord. Stk.	7½	4½	7½
Inter. Ctl. Amer. ...	794	June, 1946	\$802,902	+ \$33,920	25	\$5,657,516	\$4,730,391	+ \$927,125	30/-	—	23½	22½
La Guaira ...	22½	July, 1946	6,657	+ 298	29	39,698	43,290	- 3,592	5 p.c. Deb.	78	70	60
Leopoldina ...	1,918	3.8.46	65,377	+ 853	31	1,749,752	1,516,364	+ 233,388	Ord. Stk.	4½	3½	3½
Mexican ...	483	31.5.46	ps. 1,464,000	+ ps. 459,100	21	ps. 18,661,800	ps. 13,441,600	+ ps. 5,220,200	Ord. Stk.	4	4	4
Midland Uruguay ...	319	June, 1946	19,346	+ 2,137	52	213,623	217,535	+ 3,912	Ord. Sh.	75/6	67/6	80 -
Nitrate ...	382	31.7.46	8,744	+ 684	30	128,031	103,976	+ 24,055	"	—	—	—
N.W. of Uruguay ...	113	June, 1946	5,098	+ 350	52	66,462	67,138	- 676	"	—	—	—
Paraguay Cent. ...	274	2.8.46	70,740	+ 61,581	5	628,784	632,606	- 3,822	Pr. Li. Stk.	79½	77	73
Peru Corp. ...	1,059	July, 1946	150,902	+ 16,152	4	150,902	134,750	+ 16,152	Pref.	10½	7½	16
Salvador ...	100	May, 1946	c 123,750	+ c 11,750	44	c 1,517,450	c 1,420,000	+ c 97,450	"	—	—	—
San Paulo ...	153½	—	—	—	—	—	—	—	Ord. Stk.	60½	50½	51½
Taital ...	156	July, 1946	3,795	+ 2,010	4	3,795	1,785	+ 2,010	Ord. Sh.	17/-	10/6	18 9
United of Havana ...	1,301	3.8.46	57,43	+ 12,230	5	274,032	234,004	+ 40,028	Ord. Stk.	3	1	1½
Uruguay Northern ...	73	June, 1946	1,229	+ 249	52	20,651	19,583	+ 1,068	"	—	—	—
Canada												
Canadian National ...	23,569	June, 1946	7,900,750	- 2,013,500	26	46,539,250	53,467,250	- 6,928,000	—	—	—	—
Canadian Pacific ...	17,037	7.8.46	1,368,250	- 181,030	31	42,245,500	47,475,750	- 5,230,250	Ord. Stk.	24	14½	22½
Various												
Barsi Light ...	202	June, 1946	1,893	+ 140	13	73,395	66,652	+ 6,743	Ord. Stk.	131	123	114
Beira ...	204	May, 1946	88,294	+ 11,733	32	597,258	613,138	- 16,060	"	—	—	—
Egyptian Delta ...	607	10.7.46	17,651	+ 1,334	14	163,964	161,765	+ 2,199	Pr. Sh.	10	8½	5½
Manila ...	—	—	—	—	—	—	—	—	B. Deb.	71	55½	68½
Mid. of W. Australia...	277	June, 1946	16,780	+ 4,914	52	208,969	219,103	- 10,134	Inc. Deb.	97½	85	75
Nigeria ...	1,900	Ma, 1946	326,207	+ 48,577	8	679,107	563,561	+ 115,546	"	—	—	—
Rhodesia ...	2,445	May, 1946	548,881	+ 52,104	32	4,066,788	3,988,192	+ 78,596	"	—	—	—
South African ...	13,301	29.6.46	1,140,809	+ 131,092	13	13,966,179	12,567,455	+ 1,398,724	"	—	—	—
Victoria ...	4,774	May, 1946	1,351,280	+ 4,246	—	—	—	—	"	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee.